

PURPOSE AND ADMIRATION



I. APOLLO

Central figure of the west pediment, Temple of Zeus, Olympia. Marble, 9 feet. Contemporary with the bronze Zeus, about 460 B.C. (See pp. 32-3.) *Olympia Museum.*

PURPOSE AND ADMIRATION

*A Lay Study of the
Visual Arts*

BY

J. E. BARTON

"We live by admiration, hope and love"

"Art is not one aspect of life: it is the
whole of life seen in one aspect"



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benefit of such truths would certainly be a sacrilege. In giving preference to English as the medium of translation we have been actuated by more reasons than one.

It cannot be gainsaid that English has now become almost the *lingua franca* of the world, and to disseminate the ancient wisdom of India throughout the world, we could not have selected a medium better than the English language.

Besides this, we have been actuated by the hope of drawing the direct attention of our benign Government to the scientific value of our system of Medicine by the adoption of such a procedure.

Here we must not stop without expressing our sincere and hearty thanks to our learned and valued friends Kaviraj Jogindranath Sen, M.A., Vidyabhusana, Kaviraj Jnanendranath Sen, B.A., Kaviratna and Professor Satyendranath Sen, M.A., Vidyāvāgisa, who have rendered us material help in the publication of this volume. We must freely admit that but for the active and continued co-operation of the above-named gentlemen we could not have brought out this volume so promptly and successfully. Our thanks are also due to Dr. S. Sanyal, B.Sc., L.M.S. for his kind help, to Dr. S. N. Goswami, B.A., L.M.S. for his kindly supplying us with materials for writing the Introduction, and to our readers for their kind encouragement,

In conclusion, we implore our readers to excuse the errors of omission and commission which are inevitable in the execution of such a huge work, more especially when the author is encumbered with the responsible duties of his profession involving, as they do, the life and death of persons entrusted to his care.

10, KASHI GHOSHE'S LANE,
CALCUTTA. } KUNJA LAL BHISHAGRATNA.
November, 1911.

INTRODUCTION.



In the introduction of the first volume of our translation of the Susruta-Samhitá we have attempted to place before the public a correct interpretation of Váyu, Pitta and Kapha, the falsely so-called humours of the body* and it is a great pleasure to us, that our pronouncement has been very kindly accepted. In the introduction of the present volume we would draw the attention of the readers to the fact that Ayurveda is not at all an encyclopædic work,—an Encyclopædia of the Indian

Ayurveda is not an Encyclopædia of ancient medical works, but a Treatise on Biology.

* Berdoe says :—“What is known as the Humoral Pathology formed the most essential part of the system of the Dogmatics. Humoral Pathology explains all diseases as caused by the mixture of the four cardinal humours, viz., the blood, bile, mucus or phlegm and water. Hippocrates first leaned towards it, but it was Plato who developed it. The stomach is the common source of all these humours. When diseases develop, they attract humours. The source of the bile is the liver, of the mucus the head, of the water the spleen. Bile causes catarrhs and rheumatism, dropsy depends on the spleen.”

Be it observed that among the humours of Hippocrates there is no place for Vāta although in point of fact both his Physiology and Pathology are to be traced to the “Tri-dhātu” of Ayurveda. The secret of this anomaly is that the theory of Vāta was found to be a complicated one and Hippocrates, not being able to comprehend its original import, left it out and cautiously introduced, in its stead, his own theory of “water”. Some find “Humoral Pathology is not of Indian origin; neither it is the same which the Indian Rishis of Rígveda developed under the name of Tri dhātu.” It is simply an imitation of Susruta who introduced blood (श्लिषितचतुर्थैः) as the fourth factor in the genesis of diseases. But the borrower, in his interpretation of Susruta, had made a mess of it. He retained blood, but substituted “water” in place of Vāta, the most important of the three, for reasons best known to him,

system of Medicine in all its departments, but it is the Science of Life entire.

Though it is customary and convenient to group apart such phenomena as are termed mental and such of them as are exhibited by men in society, under the heads of Psychology and Sociology, yet it must be allowed that there are no absolute demarcations in Nature, corresponding to them, and so in the entire Science of Life, psychology and sociology are inseparably linked with Anatomy and Physiology, nay, more, with Pathology and Hygiene and above all with Treatment. In short the Biological Sciences must deal with whatever phenomena are manifested by living matter in whatever condition it is placed. Life in health (सुखाद्यः) as well as Life in disease (दुःखाद्यः), therefore, fall within the scope of Biology—even life exhibited by man in Society (हिताहित) is not exempted from it.

हिताहितं सुखं दुःखमायुषस्य हिताहितम् ।

मानसं तच्च यचोक्तमायुर्वेदः स उच्यते ॥ चरक, श्लोकस्थान, १३ अध्याय ।

In calling Ayurveda, therefore, the entire Science of Life,

Ayurveda,—the entire Science of Life. we are not guided by any prejudice of our own, but we rely solely on facts and figures, and these, when

closely studied, will lead any one to arrive at the same conclusion, not unlike our own and to interpret Ayurveda as a collection of Biological Sciences in all departments. In the first place, for the guidance of our readers, we will mention that the name Ayurveda itself is a strong evidence

Negative Evidence thereof:—

I. The Name itself.

in favour of its being called the Science of Life. Secondly, we will refer to the arrangement of the subject-matter in the Sámira-sthána which is popularly believed to be the anatomical portion of the book, as

II. The arrangement of the subject-matters

tending to the same conclusion. In this section, chapters on Midwifery and Management of Infants follow close to the heels of those on Anatomy and Physiology, and

these latter again are immediately preceded by chapters on Psychology. This intermixture is certainly an anomaly and can in no wise be satisfactorily explained unless we have to look upon these as general truths of Biology, elucidated by the introduction of special truths exclusively collected from the science of medicine—*निष्पन्नानि सारथ्यं सन्दर्शितानि* । To call it Descriptive Anatomy or Physiology, in the modern sense of the term is simply ridiculous. The

Want of Descriptive Anatomy and Physiology in the sections of *Sarīra-sthāna* itself:—

absence of any reference to brain and spinal cord, to pancreas and heart, in a book of Anatomy and Physiology is unpardonable and in the *Sarīra-sthāna* we feel this absence almost to despon-

ency. Moreover, in western medical science, Grey's Anatomy and Kirke's Physiology, for instance, in their bulk, exceeds, each, more than a thousand of pages and to present to the public, under the same name less than half a dozen of pages, as the result of Indian wisdom, is certainly a very miserable contrast—a contrast that is calculated to inspire no admiration, but, on the contrary, to generate in scientific minds an universal apathy, at least an apathy towards all that is connected with the system of Indian Medicine. In order to save our venerable Rishis from this disastrous plight, we announce here foremost of all, that our beloved Science of Ayurveda is by no means an Encyclopædic work, but

Positive Evidences

I. The definition of *Ayus*

Same as Life as defined by Mr. Herbert Spencer

distinctly possesses every characteristic that marks the Science of Biology. The very name *Ayurveda* indicates that it is actually a science of *Ayus* and the word *Ayus* is used here in the same sense as Mr. Herbert Spencer

understands by his remarkable definition of Life.

In his masterly classification Mr. Herbert Spencer has, in his Biology, given, indeed, the first place to Anatomy and Physiology, but still it is divested of any elaborate chapters dealing with the subjects.

In the science of Life a short reference to the structures of the body or its functions is quite sufficient to illustrate its principles, and if we fail to find therein any discourse on the descriptive Anatomy and Physiology, we still consider that there is nothing amiss.

But unfortunately the fate of Ayurveda is otherwise. Though the very name indicates that it is Biology pure and simple, still it is denounced for its deficiencies in Anatomy and Physiology, and doomed for ever.

Sanskrit words are notorious for their confusion of meanings, but, as regards Ayurveda there exists no difference of opinion, at least, so far as the first word is concerned. *Ayus* is *Ayus* everywhere in Ayurveda and it is the only fault our venerable Rishis may be reasonably charged with, that they did not put themselves into any great trouble to explain *Ayus*, but, on the contrary, unlike scientific men, misspent their energy to ascertain the significance of the insignificant portion of Ayurveda, that is the meanings of the root "*Vida*" in the light of Grammar.

The scientific ear, ever unsatisfied with these grammatical eruditions, has ultimately thrust an Encyclopædic value upon what is properly speaking, a book of Biology. Of course, there is a marked difference between the two. An ordinary treatise on Biology deals with the general truths of life, and does not represent, by way of illustrations, all its special truths, nor their practical sides, but so far as Ayurveda is concerned, the general truths of Biology are thrown into the background and the special truths, gleaned exclusively from the science of medicine, are given great prominence (भिषगादिषु सहाय्यं सन्दर्शितानि), so much so, that it is now regarded as a system of Medicine and Surgery which has neither Biology, nor Anatomy, nor Physiology, nor Pathology—but is a systematised Empiricism or Quackery. This is certainly a great misfortune. Apart from the name, the arrangement of the subject, to which we have just referred, at least, in the section of *Sārira-sthāna* (the falsely so-called Anatomy of

INTRODUCTION.

the Hindus),—is a direct contradiction to its being considered as an Encyclopædic work. The existence of the chapters on midwifery and management of infants in the same, following immediately the chapters on Anatomy, serves as a strong additional evidence thereof. It is an anomaly no doubt, that Midwifery has been offered a place in the section of

Reasons for incorporating Midwifery into this Anatomical section.

Anatomy, but the confusion does not get at all confounded, if we are led to believe that the science of generation of a superior race (if we are at all permitted to use the term) forms, indeed, an important department of Practical Biology.

From whatever standpoint we look to the question, we find there are grounds to lead any one to pronounce in our favour and to come to the conclusion at which we now venture to arrive. Besides these two important facts,

Internal evidence.

we now cite the following passage as a strong internal evidence in favour of our view. Maharshi Punarvasu, after giving us a short table of the principal structures of the human body, remarks that even this reference is considered by many as superfluous,

Reasons for omitting Descriptive Anatomy.

on the ground, that an acquaintance with the molecular construction of an organism is quite sufficient to help us as a reliable guide to treatment.

The passage referred to is quoted below :—

“एके तदुभयमपि न विकल्पयन्ते प्रकृतिमावाच्छरीरम् ।”

Now we ask the reader if this is not a sufficient evidence, proving to the hilt, that Ayurveda is nothing but Biology and that we run no risk of committing a grave omission if the chapter on Anatomy is wholesale dispensed with from Ayurveda. For the improvement of this awkward position—that in the section of Anatomy there should be no Anatomy—the entire credit is due to Susruta, as he has very wisely made the suggestion, that a knowledge of the anatomical structures of the body is of great value, at least so far as it

helps the Surgeons and the Surgeons only in their operations.* But so far as Biology is concerned with medicine, Susruta does not forget to lay particular stress on the knowledge of the molecular construction of the body. The following memorable passages actually preached by this renowned Surgeon, some three hundred centuries ago, still stands as a model from which modern Science, even in its present advancement, can draw inspirations.

He says :—

1. न शक्यश्चक्षुषा द्रष्टुं देहिं सूक्ष्मतनो विभुः ।
दृश्यते ज्ञानचक्षुर्भित्तपश्चक्षुर्भिरिव च ॥
शरीरे चैव शास्त्रं च दृष्टार्थः स्याद्विज्ञानदः ।
दृष्टयुताभ्या सन्देहमवापीच्छाचरेत् क्रियाः ॥
2. तस्मान्निःसंशयं ज्ञानं हृत्ता शक्यस्य वाञ्छता ।
शोधयित्वा मृतं सम्यग् द्रष्टव्योऽङ्गविनिश्चयः ॥
प्रत्यक्षतो हि यद् दृष्टं शास्त्रदृष्टञ्च यद्वेत् ।
समासतस्तदुभयं भूयो ज्ञानविद्वद्गनम् ॥

That is, the protean work of the protoplasm in which the great Self resides cannot be detected by the body's eye ; to know its work, mind's eye is necessary, along with the body's eye. For acquiring efficiency in Surgery alone, the dissection

* Susruta recommends dissection on dead human bodies and suggests that it is only required of those who will practise surgery and that students of medicine can do without it. Herophilus practised dissection on living bodies and with the object of practising medicine successfully, but it soon fell into disrepute and did not at all influence the art of Medicine. He was condemned even by his own pupil Philinus of Cos who declared that all the Anatomy his vivisectioning master had taught him had not helped him in the least in the cure of his patients. Such indeed was the fate of vivisection for which Europe now takes pride.

But Susruta's, *Avagharshana* is now considered by many as the only perfect mode of dissection ever known. It is with the help of this method of dissection that the layers of epidermis and dermis could be discovered and blood vessels with their minute branches could be counted to be as many as thirty millions. Not only this, but also in the opinion of several European savants, Susruta still stands as a model of surgery and European surgery has borrowed many things from Susruta and has yet many things to learn.

of dead body' (not of living body as proclaimed by Herophilus), nay, the *Avagharshana* which brings into view

The knowledge of the Molecular Construction of the body is all that is wanted.

the layers of the epidermis and the dermis, the number and branches of blood-vessels and nerves that lie embedded in muscles, etc., is only necessary.

Professor Michael Foster's remarks in his article on Physiology in the *Encyclopedia Britannica*, to all appearances, are just in the same line, if not identical with our extract, when he says "that the problem of Physiology, in the future, is largely concerned in arriving by experiment and inference, by the *mind's eye*, and not by the body's eye alone, assisted, as that may be, by lenses yet to be introduced at a knowledge of the molecular construction of the protean protoplasm, of the laws according to which it is built up and the laws according to which it breaks down, for these laws when ascertained will clear up the mysteries of the protean work which the protoplasm does."

In short the knowledge of the molecular construction of the body is just the thing with which Biology is concerned, and such is the unanimous verdict both in the East as well as in the West, in the most ancient and in the most modern Sciences of the world. Now, if the 'knowledge of the molecular construction of the protoplasm, of the laws according to which it is built up, and the laws according to which it breaks down,' is all that is necessary for an accurate knowledge of Anatomy and Physiology, our *Ayurveda* is pre-eminently the Science we want

The following extracts, from *Charaka Samhitā*, are cited here to prove that we are quite justified in our contention.

१. शरीरावयवास्तु परमाणुभेदेनापरिसंख्यया भवन्ति—तेषां संयोगविभागे वायुः कारणम् । कर्म्म स्वभावयेति ।

२. शरीरसंख्या यो वेद सन्नावयवयो मिवक् ।

तदज्ञानमिति चेन्न स मोहेन न युज्यते ॥

That is, the body is composed of molecules and these are said to be numberless, because no body can count them up.

By their union, they build up the body, and this union is governed by three Laws, viz, the Laws of Váyu, Karma and Swabháva (which are almost equivalent to the three Biological Laws, *i.e.*, the law of heredity, the law of external relations and the law of molecular motion caused by Ethereal vibrations compared with which nerve-impulses—akin to electric force,—are grosser and coarser shocks). So far we think we have proved that Ayurveda, as a Biology is not defective, if it contains no descriptive Anatomy and Physiology—descriptive in the same sense as Grey's Anatomy or Kirke's Physiology is. Its Histology is molecular; its Pathology is molecular, its Physiology is molecular. **Molecular in every sense is the Biology of the Hindus** Virtually speaking, Ayurveda is our Science of Life, and we will presently shew that *Life* and *Ayus* are identical.

The continuous adjustment of molecules, their successive breaking down and building up within an organised living body, without destroying its identity, is the definition of *Ayus* as suggested by Maharshi Punarvasu.

He says —

अरीरेन्द्रियसत्त्वात्मसयोगो धारि जीवितम् ।

नित्यगन्थानुवन्ध पथ्यायैरायुरुच्यते ॥

In another place the same definition is repeated with a slight modification and in this he enumerates चेतनानुवृत्तिः, (consciousness) as the most distinctive

The Definition of Ayu. characteristic of *Ayus* According to this definition, अरीरेन्द्रियसत्त्वात्मसयोगः and चेतनानुवृत्तिः re'er to an organised living body, नित्यगः and अनुवन्धः are identical with processes of breaking down and building up of the organism without destroying its identity. The idea of continuous adjustment is included also in these two words.

So we find, the definition of *Ayus*, as suggested by Punarvasu,

The same as Life includes more than what is proposed in Mr Herbert Spencer's definition of *Life*.

The words धारि and जीवितम्, as explained by the great annotator Chakrapáni, represent two more distinct phases of Life, the

first bearing upon the existence in the system of a preventive factor of putrefaction, the second pointing to the agent or agents that adjust the internal relations by delicate touches, which professor Michael

More comprehensive than Life as defined by Mr. Herbert Spencer.

Foster speaks of as "continuously passing from protoplasm to protoplasm and compared with which the nervous impulses (which are perhaps electrical in nature)

Prof. Michael Foster on the Theory of Sensation

are grosser and coarser shocks." Now this last epithet, *viz*, "जीवित्," as explained by Chakrapāni—"जीवयति प्राणान् चारयति"—furnishes us with a clue to determine what *Ayus* (आयुः) actually means.

The Findings of the Upanishads.

Our Sacred Upanishads now come forward to our relief and tell us, in the first place, "आयुः प्राणः," *i.e.*, *Ayu* and *Prāna* are one and the same principle. In the second place, "वः प्राणः स वायुः," *i.e.*, *Prāna* and *Vāyu* are identical. In the third place, "स एष एवाय वायुराकाशिनान्वः," *i.e.*, *Vāyu* is not unlike Ether. In the fourth place, "ख पुराण वायुर ख," *i.e.*, the primitive fluid (according to Lord Kelvin) is divided into two parts, *viz*, one without motion, another endued with motion. In the fifth place, "सर्वमित्याकाशे," *i.e.*, everything in this world are waves of this Ether endued with motion. In the sixth place, "वायुर्वायु संवर्गः" "वायुरेव देवेषु, प्राणः प्राणेषु," *i.e.*, *Vāyu* is the universal store of energy; in the Physical world it is known by the name of *Vāyu*, in the Living world it is called under a different name and that name is *Prāna* (प्राणः)

From the above short table we come to know that the agent that adjusts the internal relations to external relations, is *Ayus* and that *Ayus* is Life, and that Life is a motion of the great ethereal fluid which is known in Sanskrit as "ख" and that

The same as primitive fluid as defined by Lord Kelvin.

"वायुर ख" is the sum of all the various energies—biological and abiological—which under the name of heat, light, electricity or consciousness, etc., manifest themselves both in the Physical as well as in the Metaphysical

world, and that *Prána* (प्राणः) is another name of the same force that, in acting on an aggregated living body, divides itself into five distinct forces, viz., *Prána*, *Apána*, *Samána*, *Uddána*, and *Vyána*, and subserves the functions of correlation (वायुः) and sustentation (पित्त) and controls oxidation (श्लेष्मा). So *Prána* continuously helps to adjust, like the main-spring of a watch, the internal relations to the external relations. We are indebted to the master mind of Sankara for his able exposition

The Identity of Váyu and Ether.

of the functions of this main-spring, that is, of the etherial vibrations (वायुप्राणः) as transformed into the *vital force* in an organised body. We quote below what he says about it in his celebrated commentary on the Vedānta Darsana.

The five divisions of Váyu in its action on a living aggregate

वायुरेवास्यमध्यात्ममापन्नः पञ्चव्यूहो विशेषात्मनाऽवतिष्ठ-
मानः प्राणो नाम भव्यते न तत्त्वान्नर नाऽपि वायु-
मात्रम् । अतयोमे अपि भेदाभेदश्रुती न विरुध्यते ।
२।४।६ ।

That is, the primitive fluid that is endued with motion in its evolution of Life gets knotted into five divisions, viz., *Prána*, *Apána*, *Samána*, *Uddána* and *Vyána*, and this acting on any aggregated living matter is called *Prana*. So what we call *Prána* is not the *Váyu* itself, but a particular mode of its motion. Hence the question of identity and non-identity is a matter of choice. Shortly speaking, this is the Biology of the Hindus. This too is the sum and substance into which (as a department of Biology), Physiology unfolds itself

Biology forms the basis — Medical Science developed as so much collateral branches

This too evidently serves as the line of demarcation between सुखायुः and दुःखायुः, हितायुः and अहितायुः. From this too Health and Disease, Hygiene and Treatment, Psychology and Sociology have all their origin and start. In fact, Biology forms the basis upon which the great edifice of the Indian Medical Science, as a collateral branch, has been developed

Conclusion

The general truths of Biology are all there in the Ayurveda, but the special truths from medicine

have been given so great a prominence that the real character of the book has been over-shadowed and it has been transformed into a Science of Medicine.

* * * * *

With a view to convey to the minds of our readers an idea of the different branches of the Medical Science which developed as a collateral branch of this great Science of Life, we would here touch upon a few of them in passing.

Magnetism. Magnetism had formed its way into the therapeutics of the ancient Hindus and animal magnetism was very extensively practised in India long before they were recognised by Mesmer in Germany and subsequently by John Elliotson in England.

Hydropathy. The Indian writers on Medical Science of the good old days have described in length the medicinal properties of the waters of the principal rivers, lakes, water-falls and mineral springs of the country that were known at the time and their respective curative powers as applied to various ailments that human flesh is heir to. This goes a long way to establish the fact that Hydropathy was known in India long before it was even dreamt of in the Western world.

Massage. The ancient Hindu sages from time immemorial had been cognizant of the benefits of massage and shampooing and taken to practising them. Whereas, it is but of late that the advantages of these methods have begun to be appreciated by the Western Medical School and it no longer hesitates to acknowledge them as efficacious therapeutic agents.

Genesisiology. The Science of begetting healthy and beautiful children, which is just beginning to receive attention in other countries was not unknown to the ancient Hindus, and Manu in his *Mánava-dharma-Sástra* has laid down special injunctions which still form an integral part of the domestic life of the orthodox section of the community. As a matter of fact, they knew

that mental impressions of the parents at the time of conception exercise a great influence over the future destiny of the child in embryo.

Thus we read in the Sástras —“A woman, though at a distance, conceives a child of the shape of the person she loves ardently and thinks of at the time Just as a tree that grows is not different from the parent tree whether we plant a branch or sow a seed, so the main features of the child partake of the features of its father, though there might be slight changes due to the soil.”

The subtle soul co-operates with the Manas (the mind) ; the mind co-operates with the senses ; the senses perceive objects , all this takes place in little or no time The above is the connection between the soul and objects around us What is there which the mind cannot comprehend ? Therefore, wherever the mind enters, the soul follows it.

“The soul being subtle, whenever it enters another soul, requires some time and an effort of the mind to know the latter. The soul, which intensely meditates on an object, assumes the shape of that object.” etc, etc.

In a book entitled Bhoja-Prabandha being a collection of the anecdotes relating to the reign of Bhoja Rája, by Pandita Ballala there is narrated the detail of an interesting surgical operation which had been performed on the Rájá, who was suffering from an excruciating pain in the head All the medical aid obtaining at the same time was availed of, but in vain and his condition became quite critical when two brother physicians accidentally arrived in Dhar, who were duly called in. These physicians, after carefully examining the patient, held that unless surgically treated no relief could possibly be afforded to the Royal patient. Accordingly they administered an anæsthetic called **Sammohini** with

* *Vide*—Baráha Mihir's Brihat Samhitá Book, II. Chapter lxxv. Verses 1-3.

a view to render him insensible and, when completely under the influence of the drug, they trephined his skull, removed the malignant portion of the brain, the actual seat of the complaint, closed and stitched up the opening and applied a healing balm to the wound. Then they administered a restoration known as *Sanjivani* to the patient, who, thereupon, regained consciousness and felt quite at ease. This incident (as narrated by Thakur Saheb of Gondal in his Short History of Aryan Medical Science) goes to prove that the attendant physician of Buddha, is likewise recorded to have practised cranial surgery with the greatest success. Instances of successful cases of abdominal section are also not rare. Thus it will appear that the ancient Indians knew and successfully practised surgical operations which are regarded now-a-days as the greatest triumphs of modern surgery. The purpose of chloroform in the palmy days of yore was used to be served by *Sammohini*, but there is hardly a drug known to modern Pharmacopœias, corresponding with *Sanjivani* which certainly lessens the chances of deaths that at present sometimes occur under anæsthetics.

Let them, who allege that the Hindu system of the healing Art is unscientific, now pause and reflect ere they make such an unwarranted and irresponsible assertion. How can a system which contains so accurate an account of the unions of bones and ligaments, anastomoses of nerves, veins and arteries, etc., and which assures the world of the existence of three crores and a half of veins and arteries in the human body giving facts and figures thereof with such mathematical precision, be regarded as being unscientific?

It is certainly an undeniable fact that one of the colossal achievements of modern Western Medical Science is its Anatomy; but the point at issue is whether the process of laying open the structures of the body with the lancets, is—at all a satisfactory method. For, is it not a fact that the finest and the

Dissection.

minutest arteries of the skin are never disclosed, if the scalpel is used so recklessly to remove the skin all at once and not allowed to go deeper into the muscles to expose the minute branches of blood vessels and nerves that may happen to lie embedded therein? But, on the contrary, look at the process promulgated by Susruta for demonstrating practical Anatomy! Its originality and perfection beats hollow all the known methods, although it was discovered in almost the pre-historic age. The process prescribed by the Hindu system is as follows.—Cover a dead body with *Kusa* grass and place it at the edge of the water of a rivulet. After three days take it out carefully, and gradually take off the successive layers of the epidermis and dermis and of the muscles beneath by gently and lightly rubbing it over with a soft brush. Thus the smallest and the thinnest arteries, which have by this time swelled and obtained a distinct existence are made palpable everywhere even to the minutest.

The process is termed, as we have pointed before, *Avagharshana* by Susruta. The Western method might be an easier and a more off-hand one, but by no means precise.

Avagharshana. Though the merit of discovering this mode of dissection is due to Susruta, we are all blind to it and call Hippocrates the father of Medicine! It is generally believed that with a view to further his researches and perfect his knowledge, it is Hippocrates who inaugurated the system of dissection of dead human bodies and he did the work secretly. Credulous people may lend a willing ear to such assertions but the fact is, that it was not till a century later that Herophilus openly resorted to dissection of human bodies and thereby earned an undying fame in Europe, obliterating Susruta's name for ever, though, virtually speaking, he (Susruta) was the pioneer of dissection and figured in the world more than a millenium before the advent of Hippocrates and over eleven centuries prior to the age of Herophilus.

It would not, perhaps, be out of place here to mention that Dr. A. F. R. Hoernle, M. A., F. R. S., C. I. E., Ph. D., in his recent publication on Hindu Osteology, has proved it to the hilt, how systematic, scientific, unerring and exact were the researches of the ancient Hindus and what a mine of resplendent truths lay imbedded in them! We, in our Introduction of the first volume of this work, have tried to prove how very superb, salutary and supremely happy was the theory of Vāyu, Pitta, and Kapha promulgated by Susruta. There we have incidentally mentioned that the Science of Embryology was not unknown to the Hindu sages. In the present volume we mean to prove to a point that the main principles promulgated in the Anatomy, the Physiology and the Pathology of Susruta yield in no way to the principles on those subjects included by the modern Western Scientists and investigators. On the other hand, we boldly affirm that in the theories propounded by Susruta some two thousand years back there lies a fund of truths which might well throw a flood of light on the field of labour of the modern scientific men of the West. For is it not a fact that the theories of *Vamana* (causing to eject the contents of the stomach by mouth), *Virechana* (causing the evacuation of the intestines), *Nasya* (causing to inhale through the nose), *Anuvāsanā* and *Asthāpana* which, in ancient India, had earned the appellation of Pancha-Karma, and had gained universal prevalence, and were extensively practised by oriental physicians from time immemorial, have, of late, been hailed by the medical authorities of the day as the most approved and commended mode of treatment.

Sceptics who care not to examine and weigh solid facts, bluntly allege that the Ayurvedic system is not based upon experiment and observation—the key stone of all true Science, and such being the case its Anatomy, Physiology, Pathology and Therapeutics are all erroneous. The suggestion, cruel and baseless as it is, originally emanated from an eminent Indian physician who has earned an un-

enviable reputation by writing a Treatise on *Hindu Materia Medica*. He says —“It (the Ayurvedic system), is built not so much upon experiment and observation as upon an erroneous system of Pathology and Therapeutics.’ But such an expression would not stand the light of day. Indeed none but the ancient Hindu sages did set a high value on experiment and observation, and where they did not claim some occult knowledge or intuition, it is upon these two that they mainly based all their knowledge.

The *Materia Medica* of the Hindus is really a marvel. Its description of the properties of drugs belonging to the animal, vegetable and mineral kingdoms, and of the articles of food essential to the maintenance of health and strength, its selection of the specific dietaries and elimination of what are prohibited in particular ailments are every day being found correct. The European preparations of Indian drugs and diets are corroborative evidence thereof. The theory adopted by the ancient Hindus as the basis of their investigation is that every substance, whether vegetable or animal, possesses five properties namely,—*Rasa*, *Guna*, *Viryya*, *Vipāka* and *Prabhāva* which lenses alone cannot reveal, nor the body’s eye after observation and experiment made upon rats and rabbits. And those who have opportunities of studying and practising both the Eastern and Western Medical Science assert that the ancient Medical Science of the Hindus once reached the highest standard of excellence and perfection in *Materia Medica*, *Therapeutics* and *Hygiene* and was simply unrivalled and unapproachable, as it blended Philosophy with Science—the mind’s eye with the body’s eye.

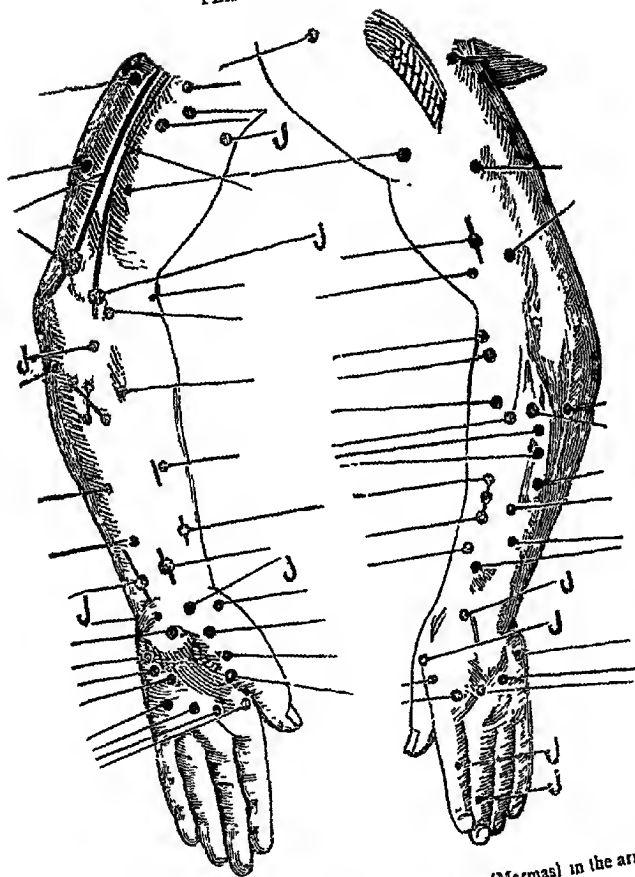
A dispassionate examination of these facts (and such as can be multiplied to any extent), will convince an impartial reader that *Ayurveda*, as we find it described in *Charaka Samhitā* and *Susruta Samhitā*, if approached in a spirit of fairness and enquiry, might reveal the germs of not a few of the marvellous achievement of the present age in the domain of Medical Science and afford to the assiduous

student a vast scope and varied materials for comparison between the Eastern and the Western systems, and render material help in improving upon the one with the aid of the other, and this to the benefit of the suffering humanity at large.

Lastly it is our prayer, that if Western Medical Science was ever anywise, directly or indirectly, benefited by the ancient Medical Science of the Hindus, it is but meet and fair that the former should come forward to render all possible aid to her parent Science, and that as it is almost dying now for want of aid and succour we look hopefully to our present benign Government in whose power lies the means of its complete regeneration.



PLATE No. 1.



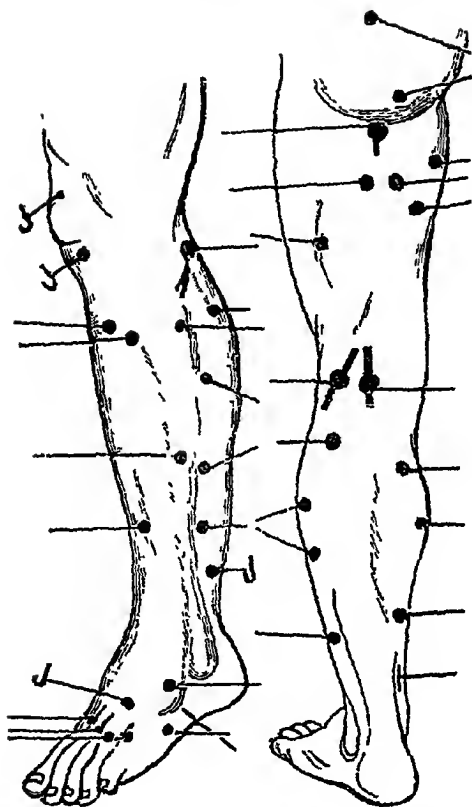
Vital points (Marmas) in the arm
(inner side).

Vital points (Marmas) in the arm
(outer side).

"j" indicates the points recognised in Jujutsu.

See Chapter VI, S'árua-Sthána,

PLATE No II.



Vital points (Marmas) in the leg
(outer side)

Vital points (Marmas) in the back
of the thigh and the leg.

"J" indicates the points recognised in Juijutsu.

See Chapter VI, S'ánra-Sthána,

CONTENTS.

NIDĀNA STHĀNA.

(SECTION ON PATHOLOGY).

CHAPTER I.

Diseases of the Nervous System, etc :—The action of the Vāyu in its normal state—The Prāṇa Vāyu—The Udāna Vāyu—The Samāna Vāyu—The Vyāna Vāyu—The Apāna Vāyu.—Descriptions of the nature of the diseases—When they are localised in the different parts of the system—Pathology of Vāta-rakta—Its premonitory symptoms—Its prognosis.—Spasms—Convulsions—Epilepsy without Convulsions—Epilepsy with Convulsions.—Hemiplegia—Its Prognosis.—Wry neck or Torticollis—Facial Paralysis—Its Premonitory Symptoms—Its Prognosis.—Sciatica.—Lerb's Paralysis.—Synovitis of the Knee-joints—Lameness.—Vāta-Kantaka.—Pāda-Dāha—Pāda-Harsha—Ams'a s'oshaka.—Ear-ache.—Deafness—Nasal voice—Indistinct Speech—Tuni.—Prati-tuni.—Tympanites.—Vātā-shthilā.—Pratyashthilā. Pages 1—17.

CHAPTER II.

Hæmorrhoids—Classifications—Pathology—Premonitory Symptoms.—Vātaja Type—Pittaja Type—Kaphaja Type—Raktaja Type—Sannipāṭaja Type—Congenital Type.—Figwarts or condylomatous growths about the genitals.—Prognosis. 18—24.

CHAPTER III.

Urinary Calculi :—General Ætiology.—Premonitory Symptoms—Leading Indications—S'leshmaja As'mari—Pittaja As'mari—Vātaja As'mari—Seminal Concretions.—Supervening Symptoms.—Situation of the Bladder.—How stones are formed in the Bladder. 25—30.

CHAPTER IV.

Fistula-in-ano and Fistular Ulcers.—Classifications—Premonitory Symptoms.—Derivation of the term Bhagandara—Vátaja Type—Pittaja Type—Kaphaja Type—Sánnipátika Type—Traumatic Type—S'ata-ponaka Type—Ushtra-gríva Type—Parisrávi Type—S'ambukávarta Type—Unmárgi Type.—Fistulous Pustules.—Prognosis . . . 31—34.

CHAPTER V.

Cutaneous Affections in general:—Premonitory Symptoms—Ætiology—Classifications—Aruna-Kushtha—Audumbara—Rishya jihva—Kapála Kushtha (Macula).—Kákanaka—Pundarika—Dadru (ring-worm)—Sthulárushka—Eka-Kushtha (Ichthyósis)—Charma-dala (Hypertrophy of the skin)—Visarpa-Kushtha—Parisarpa-Kushtha—Sídhma—Vicharchiká (Psoriasis)—Vipádiká—Kitima (Keloid)—Pámá (Eczema)—Kachchhu—Rakasá (Dry Erythema)—Kilása—Congenital cause of Kushtha—Prognosis—How Kushtha becomes contagious—Some other contagious diseases enumerated . . . 35—42

CHAPTER VI.

Diseases of the Urinary tracts—Pathology—Premonitory Symptoms—General characteristics—Kaphaja Type—Pittaja Type—Vátaja Type.—Names and Symptoms of Kaphaja Meha—Surá-meha—Lavana-meha—Pishta-meha—Sándra-meha—S'ukra-meha.—Names and Symptoms of Pittaja Meha—Níla-Meha—Haridrá-meha—Amla-meha—Kshára-Meha—Manjushthá-meha—Rakta-meha—Names and Symptoms of Vátaja Meha—Sarpir-meha—Vasá-meha—Kshaudra-meha—Hasti-meha.—Supervening Symptoms—Kaphaja Types—Pittaja Types—Vátaja Types—Abscesses—Carbuncles—Pimples.—Pustules, etc., due to Prameha—Prognosis—Symptoms of Madhu-Meha. . . 43—49

CHAPTER VII.

Dropsy with an abnormal condition of the abdomen:—Classifications—Predisposing causes—Premonitory Symptoms.—Vátaja, Pittaja and Kaphaja Types—Tridoshaja Type—Enlargement of the Spleen and the Liver with dropsy of the Abdomen—Vaddha-gudodara—Parisrávi—Udara.—Jalodara (Ascites).—General Characteristics of Dropsy.—Prognosis 50—54.

CHAPTER VIII.

False Presentations and Difficult Labour.—Causes.—Definition—Classifications and Symptoms—Abortion.—Miscarriage.—Prognosis. **Cæsarian Section.** .. 55—60.

CHAPTER IX

Vidradhi (Abscess, etc.) :—Definition and Classification—Vātaja, Pittaja and Kaphaja Types—Sānnpātika Type—Traumatic Type—Raktaja Type—Incurable type of **External Abscess.**—**Internal Abscesses**—Their localities.—Differentiating diagnosis of Gulma and Vidradhi—Incurable Type. 61—66.

CHAPTER X.

Erysipelas, Sinus and Diseases affecting the mammary glands of women—Definition of Erysipelas—Vātaja, Pittaja and Kaphaja Types—Sānnpātika Type—Kshataja Type.—Prognosis—**Nādi-Vrana** (Sinus).—Classification—Vātaja, Kaphaja and Pittaja Types—Dvandvaja and Tri-doshaja Types—S'alyaja Type.—**Stana-roga**—Breast-milk—Its character—Its normal and abnormal traits.—**Stana-Vidradhi** (Inflammation of mammary glands). 67—71.

CHAPTER XI.

Glands, Scrofula, Tumours and Goitre—Dosha-origined Glands—**Sirāja** gland (aneurysm or Varicose Veins)—**Apachi** (Scrofula, etc.)—Its symptoms—Tumour—Its symptoms—Blood-origined Tumour—**Māmsa-Arvuda**—Prognosis—**Adhyarvuda**—**Dvirarvuda**—Cause of its not being suppurated.—Definition of **Goitre**—Its specific Symptoms—Vātaja Goitre—Kaphaja Goitre—Medoja Goitre.—Prognosis—General shape of Goitre.— .. . 73—78.

CHAPTER XII.

Hydrocele, Hernia, Scrotal Tumours, Upadamsā (disease of the genital organ) and **Elephantiasis**.—Classification of **Vridhi**—Definition and Premonitory Symptoms of **Vridhi**.—Symptoms of Dosha-origined **Vridhi**—**Medoja Vridhi**—**Raktaja Vridhi**—**Hydrocele**—**Inguinal**

Hernia → **Upadams'a**—Symptoms of different Dosha-originēd types of Upadams'a —Raktaja Upadams'a.—Definiton of Elephantiasis.—Causes and Symptoms of different kinds of Elephantiasis.—Prognosis of Elephantiasis.—Localisation of Elephantiasis . . . 79—84

CHAPTER XIII.

Diseases known by the general name of Kshudra-Roga (minor ailments) —The Names and Symptoms of the diseases included therein —Ajagallikā—Yava-prakhyā—Andhāraj—Vivritā—Kachchhapikā—Valmika—Indra-vriddhā—Panasikā—Pāshāna-Gardabha—Jāla-Gardabha—Kakshā—Vishphota—Agni-Rohini—Chippa—Kunakha—Anus'ayi—Vidārikā—S'arkarārbuda—Pāmā—Vicharchikā—Rakasā—Pāda-dārikā—Kadara—Alasa—Indra-lupta (Alopecia)—Dārunaka—Arumshikā—Palta—Masurikā etc —Tila-kālaka—Nyachchha—Charma-kila—Vyanga—Parvartikā—Avapātikā—Niruddha-Prakas'a—Niruddha guda—Abhi-putana—Vrīshana-kachchhu—Guda-Bhram's'a. . . 85—93

CHAPTER XIV.

Śuka-dosha —Its classification—Symptoms of different Types —Prognosis . . . 94—95

CHAPTER XV.

Fracture and Dislocation, etc —Their Causes.—General features of Sandhi-mukta (Dislocation) —Diagnostic Symptoms of Dislocation —Different kinds of Kānda-bhagna (Fracture)—General symptoms of Kānda-bhagna —Curable and incurable Types, . . . 97—100

CHAPTER XVI.

Mukha-Roga (Diseases which affect the cavity of the mouth in general) —General Classification and Localisation —Diseases of the lips —Dosha-originēd Types —Raktaja Type—Māngsaja Type—Medoja Type —Diseases of the roots of the teeth.—Their Names and specific Symptoms —**Danta-Nādi** (Sinus at the root of a tooth) —Diseases of the tooth proper.—Their Names and specific Symptoms —Diseases of the tongue—Their Names and specific Symptoms —Diseases of the Palate—Their Names and specific Symptoms —Diseases of the Throat and Larynx

—Their Names and specific Symptoms —The different Kinds and Symptoms of Rohini,—Diseases in the entire cavity. 101—111.

End of the contents of Sutra-sthāna.

ŚĀRIRA STHĀNA.

(SECTION ON ANATOMY)

CHAPTER I.

The Science of Being in General —The Twenty-four Tattwas or first Principles.—The Purusha or the Primordial Being or the Self-conscious Reality —The Prakṛiti or the External Nature personified or the non-conscious Eternity —Traits of Commonalty and Diversity.—Comparison of the Philosophy of A'yurveda with that of Sāṃkhya as well as with the other branches of Philosophy.—Prakṛiti and Purusha how understood in the A'yurveda—Different kinds of *Aśanas* (mind).—The five Primary Elements of Creation—Their specific function—Their mutual co-operation in creation. 113—121.

CHAPTER II.

Purification of Semen and Cataminal fluid etc. :—Derangement of Semen.—Specific treatment.—Derangement of Cataminal fluid.—Specific treatment —Traits of pure and healthy Semen and Cataminal fluid. —Menorrhagia. —Amenorrhoea —Their treatment —Regimen to be observed during Menses —Conduct of husband during the period.—Prohibited period.—Conception—Subsequent Conduct.—Causes of different Colours in the child.—About twins—Causes of the child being of Defective Organ —Fecundation without sexual intercourse—Causes of Deformity in the child —State of the Fœtus—Its activity while in the womb. 122—133.

CHAPTER III.

Pregnancy, etc. :—Combination of Self with the Impregnated Matter —Factors which determine Sex —Period and Signs of Menstruation. —Signs of Pregnancy.—Prohibited conduits during Gestation —Develop-

ment of the Foetus —Longings and its effects during pregnancy —Development of the Foetus from the Sixth to the Eighth month —Time of Delivery.—Different opinions on the formation of the Foetal body —The solution—Factors respectively supplied by the Paternal and Maternal Elements, etc.—External Signs of Male, Female and Twin conception 134—143.

CHAPTER IV.

The development of Factors in the womb as well as the Factors which contribute to the growths of its different bodily organs and principles —Different folds of skin over the foetus.—The definition of Kalás and their varieties —Seat of the semen —Why and how semen is discharged —Placenta —Formation of different limbs and organs of the Foetal body —Sleep and its effect —Heart and its action —Effects of day-sleep —Somnolence.—Effect of Sleep on an Eniente woman —Gnawing —The temperaments —Symptoms of Vátaja, Pittaja and Káfya temperaments —Symptoms of Dvandvaja and Sánnnipátika temperaments —Sáttvika, Rájasika and Támasika features 144—158

CHAPTER V

The Anatomy of the Human body —Definition of foetus —Enumeration of the different Limbs and Members of body —Their Numbers—The Cavities or Viscera —Channels,—Kandará —Jála or Plexuses —Kureha or Cluster —Sevam or Sutures —Asthi-Sangháta —Simanta.—Bones of the four Extremities —Bones of the Trunk —Bones above the Cavities—Different kinds of Bones and their situation—Sandhi or Joints.—Joints of the four Extremities —Sandhis of the Koshtha and Clavicles —Their forms, distinctions and locations.—The Snáya or Ligaments —Their Number and Situations —Muscles —Muscles in the extremities in the Koshtha—Of the Head and Neck —Extra Muscles in Women —The Vaginal Canal—The Uterus—The Womb —Superiority of Surgery —Preparations of dead body—Mode of dissection 156—172.

CHAPTER VI

The Marmas or Vital parts of the body:—Classifications of Marmas—Their different Numbers —Their Locations.—Their Names and Distributions —The different Heads of Marmas.—Qualitative Classes.—Different opinions on Marmas —Marmas of the Extremities —Marmas of the Thorax, etc —Marmas in the Back —Marmas in the Clavicular region —Their specific Symptoms when injured 173—192.

CHAPTER VII.

The Description and Classification of Sirás or the Vascular System:—Their Numbers and action—Names and Classification of the principal Sirás.—Their specific Locations—The Pítla, Kapha, Váyu and Rakta-carrying S rás.—Specific Colours of Sirás—The specific Sirás not to be punctured—Sirás of the four Extremities, Trunk and the region above the Clavicles and their roots . . . 191—197.

CHAPTER VIII.

The method of Venesection—Persons unfit for Venesection—Preliminary Rules—The Jantra-Vidhi or how the patient should be placed in cases of Venesection—Venesection in the Extremities—Venesection on the different parts of the body—Proper and Defective Venesection—Classification and definition of Defective Venesection. . . 198—208.

CHAPTER IX.

The Description of the Arteries, Nerves and Ducts—Region and Number of Dhamanis—Functions of the up-coursing Dhamanis—Functions of the down-coursing Dhamanis—Functions of the lateral coursing Dhamanis—The Situation of the Srotas and the specific Symptoms when pierced at the roots . . . 209—215.

CHAPTER X.

Nursing and Management, etc. of Pregnant Women from the day of conception till parturition—General rules—Especial Regimen during the period of Gestation—Sign of imminent Parturition—Effects of premature Urging—Preliminary Measures.—Post-parturient Measures—Natal Rites—Diet for Children—Treatment of the Mother—Makkalla pain and its treatment.—Management of the Child.—Lactation.—Selection of Wet-nurses—Examination, etc. of Breast-milk—Treatment of Wet-nurses.—Infantile Diseases and their Diagnosis—Treatment of Infants—Infantile Elixirs—Nursing of child—Symptoms when malignant stars, etc. strike the child—Education and Marriage.—Defective Pregnancy—Its Symptoms and Medical treatment.—Miscarriage—Its treatment—Management of Pregnancy and special Recipe for Pregnant Women according to c months of Gestation .. . 216—238.

End of the contents of Śáirā Sthána

CHIKITSITA STHĀNA.

(SECTION ON THERAPEUTICS).

— o —

CHAPTER I.

The two kinds of inflamed Ulcers—The Causes, Symptoms and Classification of Ulcers —Idiopathic and Traumatic ulcers —General and specific Symptoms —Symptoms of different Dosha-originated ulcers —Symptoms of Blood-originated ulcers —Symptoms of **Suddha Vrana** —Therapen-
ties —The sixty different Factors of medical treatment of ulcers —Upadrava
or the Supervening Symptoms of ulcers .. 269—264.

CHAPTER II.

The medical treatment of Traumatic Wounds or Sores —
Different Shapes and Classifications of Sores.—Their definitions—Their
specific Symptoms—Their treatment—Treatment of Cuts or Incised
Wounds —Treatment of Excised Wounds —Treatment of Viscera when
perforated.—Subsequent treatment —Treatment of Diabetic Ulcers —
Treatment of Ulcers due to Kustha or malignant Ulcers .. 265—278.

CHAPTER III

The medical treatment of Fractures and Dislocations :—
Symptoms of incurable fractures —Bandage.—Diet —Defective Bandaging
—Washing —Prognosis —Treatment of fractures in particular limbs.—
Gandha-Taila —Suppuration of fractured Bones—Symptoms of Complete
union of fractured Joints .. 279—288.

CHAPTER IV.

The medical treatment of Vāta-Vyādhi or Nervous disorders :
—Nervous affection of the A'más'āya—Nervous affections of the Palvās'tya
—S'ālvana upanāha.—General Measures beneficial to Vata-Vyādhi —The
Tilvaka-Ghrita.—The Anu-Taila —The S'ata-pāka and Sahasra-pāka Taila.
—The Patra-lavana —The Kānda or Sncha-lavana —The Kalyānaka-
lavana 289—296.

CHAPTER

The medical treatment of *Mahā-Vāta-Vyādhi*—Causes of *Vāta-Rakta*—Its definition—Preliminary symptoms—Specific features of *Vāta-Rakta*—Prognosis—Preliminary remedial measures—Plasters etc.—Treatment of *Vāta-Rakta* with a preponderance of different *Doshas*.—The five *Pradehas*—*Guda-Haritaki* and *Pippali-Vardhamāna Yogas*—Diet.—Regimen of conduct—The Medical Treatment of *Apatānaka*—*Travṛta Ghṛta*.—Treatment of *Pakshāghāta*.—Treatment of *Manyā-stambha*.—Treatment of *Apatantraka*.—Treatment of *Ardita*.—*Kshira-Taila*—*Tympanites* etc.—*Hingvādi-vati*.—Symptoms and Treatment of *Uru-stambha*.—Therapeutic properties of *Guggulu* 297—315.

CHAPTER VI.

The medical treatment of *Arśās* (*Hæmorrhoids*):—General remedial measures.—Application of *Kshāra* (*Alkali*)—Symptoms of satisfactory, excessive and defective *Cauterisation*—Diet—*Rectal Speculum*.—Plasters—Treatment of *Internal piles*—*Dantyaṁśita*.—*Abhayaṁśita*—*Bhallātaka-yoga*.—Other forms of *Bhallātaka-yoga*—Regimen of diet and conduct 316-328.

CHAPTER VII.

The medical treatment of *Asmari* (*Urinary Calculus*, etc.):—Different modes of treatment in *Asmari*—Treatment of *Vātaja*, *Pittaja* and *Kaphaja Asmari*—*Alkaline treatments*.—Modes of *Surgical operations*.—Prognosis—*Lithotomic operations*—*Post-surgical measures*—*Surgical treatment in Seminal Concretions*.—Diet.—Parts to be guarded in *Lithotomic operations*. 329-337.

CHAPTER VIII.

The medical treatment of *Bhagandara* (*Fistula-in-ano*, etc.):—Classification—General treatment—Specific measures—Different Forms and Names of incision.—Treatment of *Ushtra-griva*—Treatment of *Paṁśrāvī*—*Bhagandara* in infants—Treatment.—Treatment of *traumatic type*—Treatment of *Tri-doshaja type*—*Syandana Taila*.—Description of instrument.—Regimen of diet. 338-345

CHAPTER IX.

The medical treatment of Kushtā (Cutaneous Affections in general).—Pathology—Conduct of diet and regimen—Regulation of diet and conduct.—Preliminary treatment—Treatment of Doshaja types—Mahā-tikta Ghṛita—Tikta-Sarpib—Medicinal plasters—Alkaline treatment—Treatment of S'vitra.—Nila Ghṛita—Mahā-nila Ghṛita.—Treatment by Bleeding, Emetics and Purgatives—Vajraka Taila.—Maha-Vajraka Taila.—Treatment by Khadira.—Diet. 346-361,

CHAPTER X.

The medical treatment of Mahā-Kushtā (Major Cutaneous Affections).—Mantha-Kalpas.—Diet—Medicated Arishtas, Āsavas, Surās (Wine) and Powders—Medicinal Ayas-kṛti.—Aushadha Ayas-kṛti.—Mahaushadha Ayas-kṛti—Khadira preparations. Khadira Sāra preparations. 362-371

CHAPTER XI.

The medical treatment of Prameha (Diseases of the Urinary tracts)—Two-fold Classifications, Causes and Symptoms.—Forbidden articles of food and drink—Articles of diet.—Preliminary treatment—The five medicinal remedies—Specific treatment of Kāphaja Meha—Specific treatment of Pittaja Meha.—Specific treatment of Vātaja Meha.—Palliative measures—Medicinal Arishtas, Āsavas, Yavāgus, etc.—Mode of treating a poor Prameha-patient. 372-378,

CHAPTER XII.

The medical treatment of Prameha-Pidakā (the Abscesses or Eruptions which mark the sequel of a case of Prameha)—Curable cases of Prameha-Pidakā.—Treatment—Dhānavantara-Ghṛita.—Fomentations forbidden in cases of Madhu-meha.—S'ālā-sārādī Avaleha.—Navāyasa Churna—Lohārishta.—Traits of cure 379-385.

CHAPTER XIII.

The medical treatment of Madhu-meha:—S'ilā-jatu—Its origin, properties, and use.—The Mākslika-Kalpa—The Tuvarka-Kalpa 286-391

CHAPTER XIV.

The medical treatment of Udara (Dropsy with an abnormal condition of the Abdomen) —Symptoms of curable and incurable types — Diet of articles forbidden —Treatment of Vātaja, Pittaja and Kaphaja types —Treatment of Dushyodara —General treatment of Udara —Hantaka Ghrita —Mahā-vriksha Ghritā —Chavya Ghrita —Ānāha-Vartus —Treatment of Phihodara.—Shat-palaka Ghrita —Treatment by Venesection —Treatment of Baddha-Gudodara.—Treatment of Parisrāvi Udara.—Treatment of Uḍakodara —Treatment by tapping.—Diet. ... 392-403.

CHAPTER XV

The medical treatment of Mudha-Garbha (Difficult and mal-presentation of the Fetus and Difficult Labour) —Varieties of Mudha-Garbha —Incantations —Postures of the Fetus —Operations involving destruction of the Fetus —Craniotomy —After measures —Diet and regimen of conduct —The Bala Taila —The Bala-Kalpā 404-411.

CHAPTER XVI

The medical treatment of Vidradhī (Abscesses) and Tumours —Classifications —Treatment of Vātaja, Pittaja and Kaphaja Vidradhī —Karaṇyādya Ghrita.—Treatment of traumatic and blood-originated types —Treatment of internal Vidradhī —Treatment of Vidradhī.—Treatment of Maja-jāta Vidradhī. 412-417

CHAPTER XVII.

The medical treatment of Erysipelas etc , Sinus and Diseases of the Mammary Glands.—Classifications of curable and incurable types of Visarpa (Erysipelas)—Treatment of Vātaja and Pittaja Visarpa.—Gauryādi Ghrita.—Treatment of Kaphaja Visarpa.—Treatment of Nādi-Vrana (Sinus) —Treatment of Vātaja, Pittaja, Kaphaja and S'alyaja Nādi (Sinus) —Alkaline treatment—Treatment by Plug-stick—Bhallātākādyā Taila—Treatment of Stana-Roga—Purification of breast-milk.—Surgical treatment of Stana-Roga 418-426.

CHAPTER XVIII.

The medical treatment of Granthi (Glandular Swellings), Apachi (Scarvi), Arvuda (Tumour) and Gala ganda (Goitre)—General

treatment of **Granthi**—Treatment of **Vātaja**, **Pittaja**, **Kaphaja** and **Medoja**
Granthi—Medical treatment of **Apachi**—Surgical treatment of **Apachi**—
Arvuda—Treatment of **Vātaja**, **Pittaja**, **Kaphaja** and **Medoja** types of
Arvuda (Tumour)—**Gala ganda**—Treatment of **Vātaja**, **Kaphaja** and
Medoja types of **Gala-ganda** (Goutre) 427-438

CHAPTER XIX

The medical treatment of **Vriiddhi** (Hernia, Hydrocele, Scrotal
Tumour, etc.), **Upadamsā** (Diseases of the Genital Organ) and **Ślipada**
(Elephantiasis).—Treatment of **Vātaja**, **Pittaja**, **Raktaja**, **Kaphaja**,
Medoja and **Mutrāja** **Vriiddhi**—Treatment of **Antra-Vriiddhi**—Treat-
ment of **Upadamsā**—General treatment—Treatment of **Vātaja**, **Pittaja**,
Kaphaja, **Tridoshaja** and **Raktaja** types of **Upadamsā**—Treatment of
Ślipada—General treatment—Treatment of **Vātaja**, **Pittaja** and **Kaphaja**
types of **Ślipada**—Alkaline remedies. .. 439-449

CHAPTER XX

The medical treatment of **Kshudra-Roga** (Minor Ailments) —
Treatment of **Aja-galikā** and **Yava-prakhyā**—Treatment of **Vivritā**, etc —
Treatment of **Sārkārārūda**, etc.—Treatment of **Pāda dāri**, etc —Treat-
ment of **Alasa** and **Kadara**—Treatment of **Baldness** and **Alopecia**, etc —
Treatment of **Darunaka**, etc —Treatment of **Jatu-mani**, etc.—Treatment of
Yuvāna-pidakā—Treatment of the Retroflexion of the Prepuce.—Treatment
of the Constriction or Stricture of the Urethra—Its surgical treatment —
Treatment of the Stricture of the Anus, etc —Treatment of **Valmika**, **Ahi-**
putana and the **Prolapsus of the Anus** 450-458

CHAPTER XXI.

The medical treatment of the Sores on the Penis produced
by the **Śuka** —The specific treatment of the different types of **S'uka-**
dosha—General treatment —Prognosis. . 459-461

CHAPTER XXII.

The medical treatment of the Affections of the Mouth.—
Treatment of **Vātaja**, **Pittaja**, **Kaphaja** and **Medoja** types of **Oshtha-**

kopa—Treatment of the diseases of the **Danta-mula**.—Treatment of **Danta-Veshta** etc.—**Paridara**—**S'aushira**—**Upakus'a**—**Danta-Vaidarbha**—**Adhimansa**.—Treatment of **Danta-nādi**.—Treatment of the diseases of the different types of **Tooth** proper—Treatment of **Tongue-diseases**.—Treatment of **Vātaja**, **Pittaja** and **Kaphaja** types of tongue diseases—Treatment of the different types of **Talu-gata** diseases—Treatment of **Throat-diseases**.—Treatment of **Vātaja**, **Pittaja**, **Kaphaja** and **Raktaja** types of **Rohini**.—Treatment of the different types of the **Sarva-sara Mukha-Roga**.—Incurable types of **Mukha-Roga**. ... 462-474

CHAPTER XXIII

The medical treatment of **S'opha** (Swellings)—Classifications of general **S'opha**—Its causes—The specific symptoms of **Dosha**-originated types of **S'opha**.—Symptom of **Vishaja S'opha**—Complications—Prognosis—The special treatment of the different types of **S'opha**.—General remedies—Diet . 475-477

CHAPTER XXIV.

The Rules of Hygiene and the Prophylactic Measures:—Tooth-brushing—Cases where tooth-brushing is forbidden—Eye and Mouth-washing—Collyrium—**S'iro'bbyanga**—Combing—Anointing—**Parisheka**.—Affusion—Effusion—Anointments—Prohibitions of Anointments, etc.—Physical Exercise—Rubbing and Friction.—Massage—Bathing.—Prohibition of Bathing—**Anulepana**.—**A'lepa**.—Food—**Pravāta** and **Nivāta**.—Sleep—General Rules of Conduct—Rules for Drinking Water, etc.—**Curd (Dadhi)**.—When and How to be taken—Women unfit to visit—Evil Effects of the foregoing Abuses ... 480-502.

CHAPTER XXV.

The medical treatment of a Variety of Diseases.—Diseases of the Ear-lobes—Classification—Causes and Symptoms—General treatment—Specific treatment.—Treatment of **Palita**.—Treatment of **Vyanga**, etc

503-504

CHAPTER XXVI.

The medical treatment for increasing the Strength and the Virile Power of weak persons —Definition of Vāji-Karana—Means of Vāji-karana —Causes and Symptoms of the six Forms of Sexual incapacity —Incurable types —Remedies—Utkārika—Pupalikā —Cakes etc. 510-514.

CHAPTER XXVII

The Recipes and Modes of using Elixirs and Rejuvenators —The Human Organism—Which will make it invulnerable to the inroads of any Disease and Decay —Time of using Rasāyana.—Rasāyana for Mental and Physical maladies —Vidanga-Rasāyana—Vidanga-kalpa —Kāśmārya-kalpa.—Bālā-kalpa.—Ati-bālā, Nāga-bālā, Vidāri and S'atāvāri-kalpa.—Vārāhi kalpa —Use of S'ana (seeds) 515-521

CHAPTER XXVIII

The Elixirs and Remedial Agents which tend to improve the Memory and invigorate the Mental Faculties as well as to increase the Duration of Human Life —S'etāvalgūya Rasāyana—Kṛishnāvalgūya Rasāyana—Manduka-parṇi-Rasāyana—Brāhmi-Rasāyana—Brāhmi-Ghrita—Vachā-Rasāyana—S'ata-pāka Vachā-Ghrita —Measures for prolonging life —Uses of Gold 522-523

CHAPTER XXIX.

The Restorative and the Constructive Agents which arrest innate morbid tendencies and decays —Classifications of Soma —Mode of using the Soma.—Regimen of Diet and Conduct after taking Soma —Its Therapeutic effects —Distinctive features of the Soma-plants—Their descriptions—Their Habitats 530-538.

CHAPTER XXX.

The Tonic Remedies which remove Mental and Physical Distress .—Persons unfit for the use of Rasāyana —Names of the healing drugs —The Mode of their use —Regimen of Diet and Conduct—Dosage—Therapeutic effects —Differentiating traits.—Mode of Culling the above drugs.—Their Habitats —The common Habitat of all the Oshadhis . 539-545.

CHAPTER XXXI.

The medicinal uses of Sneha, etc. ;—Classifications of Sneha—Description of Sneha—The specific uses—Measures of drugs—The Kashāya-pāka-Kalpa—The Sneha-pāka-Kalpa—Alternative methods.—Application of Sneha according to specific Dosha and Season—Degrees of Cooking a Sneha—Distinctive traits of the complete cooking of a Sneha—Process of Internal Use of Sneha—The Specific Uses of Clarified butter—The Dosage—Evil Effects of over-dosage—Sadyah-Sneha—Forbidden cases of Sneha-pāna—Good Effects of Sneha-pāna. 546-557.

CHAPTER XXXII.

The medical treatment by measures of Svēda (Fomentations, Diaphoretic measures etc.)—Classifications of Svēda.—Its Specific Applications—Effects of Svēda—Prohibited cases of Svēda—Symptoms of perfect and imperfect Svēda—Measures to be followed after Svēda. 558-564.

CHAPTER XXXIII.

The Distresses which prove amenable to the use of Purgatives and Emetics.—Importance of Purgatives and Emetics.—Mode of application of Emetics—Symptoms of excessive, satisfactory and deficient Emetics—Effects of satisfactory Emetics.—Cases where Emesis is forbidden—Cases where Emesis is recommended.—Mode of administering Purgatives—Classifications of Koshtā—Diet—Benefits of proper Purgation—Persons who should not be purged—Persons who should be purged.—Necessity of applying Sneha before the administration of Purgative or Emetic 565-589.

CHAPTER XXXIV.

The treatment of the Disorders resulting from an Injudicious Use of Emetics or Purgatives ;—Their Classes—Causes and treatment.—Evils of an Unpurged Residue of a Purgative or Emetic.—Evils of a Digested Purgative, etc.—Evils of insufficient or excessive expulsion of the Doshas.—Flatulent Colic—Partial and Deficient Medication (Ayoga).—Over-drugging with purgatives, etc. (Au-yoga).—Hæmorrhage due to excessive Vomiting or excessive Purging (Jivādāna)—Jiva-sōnita, how to be known.—Flatulent distention of the Abdomen (Ādhmāna)—Cutting

pain in the Anus, etc —Dysenteric stools (Paristāva) —Diarrhoea (Pravāhikā) —Overwhelming the heart —Retention (Vibandha) of flatus, stool and urine

577—589

CHAPTER XXXV.

The Dimensions and Classifications of a Netra and a Vasti with their therapeutic applications —The importance of Vasti-Karma —The application of Vasti in different diseases —Dimensions of the Pipe —Materials of the Pipe —Construction of the Vasti —Classifications of the Vasti —Nomenclature of the Vasti —Application of Niruha-Vasti and Ásthāpana-Vasti —Their therapeutic Effects—The different Defects of a Vasti.

590—598

CHAPTER XXXVI.

The medical treatment of the mishaps which are consequent on the Injudicious Application of the Pipe and the Vasti —Remedies for the injudicious application of the Pipe —Disorders resulting from a defective Vasti (bladder) and its contents —Disorders resulting from the defective Position of the Patient —Remedies for the Complications of the defective position of Niruha-Vasti and Sneha-Vasti —Intervals for the application of Purgative, Emetic, Ásthāpana-Vasti and Anuvāsana-Vasti

599—607.

CHAPTER XXXVII.

The treatment with Anuvāsana-Vasti and Uttara-Vasti —The Process of Anuvāsana-Vasti—The process of preparing several medicated Oils and Snehas —Proper time for the application of Sneha-Vasti —The mode of applying a Sneha-Vasti —Symptoms of insufficient, excessive, and satisfactory application of Anuvāsana-Vasti —Diet after the application of a Vasti —The Successive Actions of a Vasti —Distresses from Injudicious Application of Sneha-Vasti —Specific Symptoms —Their remedies —**Uttara-Vastis**—Dimensions of the Pipe of the Vasti for a Male and for a Female patient —Mode of application —Vaginal Uttara-Vasti —Diseases amenable to Uttara-Vasti

608—626

CHAPTER XXXVIII.

The mode of applying, as well as the treatment with a **Nirudha-Vasti**—The mode of Preparing a **Vasti**—The mode of Applying a **Vasti**.—Symptoms of a satisfactory application of a **Vasti**—Subsequent treatment and Diet—Drugs to be used in a **Niruha-Vasti**—The Formula of a **Niruha-Vast**—The process of preparation—The **Dvādasa-Prasūti**—Classifications of **Vastis** according to the range of their therapeutic applications.—Corrective **Vastis**—**Lekhana-Vasti**—**Vāji-Karana-Vasti**—**Vrimhana-Vasti**.—**Pichehula-Vasti**—**Grāhi-Vasti**—**Sneha-Vasti**—**Utkles'ana-Vasti**—**Dosha-hara-Vasti**—**Soothing Vasti**.—**Yukta-ratha-Vasti**—**Siddha-Vasti**—**Mustādhika-Vasti**—Variations in the composition of **Vastis** in cases of persons of different Temperaments—Nomenclature of different **Vastis** and their Specific Uses ... 637—646

CHAPTER XXXIX.

The treatment of distressing Symptoms which are manifested in a patient—The quantity of diet to be taken after the exhibition of a **Niruha-Vasti**—Internal application of **Sneha** after Blood-letting—Preparations of different diets—Diet to be taken according to the **Dosha** and to the strength of the patient.—Regimen of conduct—Articles of diet. 647—652.

CHAPTER XL.

The treatment which consists in employing the **Dhuma** (Fumes), **Nasya** (Snuffs) and **Kavala** (Gargles).—Classifications of **Dhuma**—Materials of different **Dhuma-Varti**—Formation of the Pipe used in **Dhuma-Pāna**—Mode of inhalation of different **Dhumas**—Prohibitive cases—Time of **Dhuma-pāna** (Smoking)—The therapeutic effects of **Dhuma-Pāna**—Mode of Smoking—**Snuffs** and **Errhines** (**Nasya**)—The Nomenclature of the term "**Nasya**"—Classifications of **Nasya**—**S'iro-Virechana**—Its application—Dosage of **Sneha-Nasya**—Effects of proper, excessive and deficient application of a **Sneha-Nasya**—**Avapida-Nasya**—Forbidden cases.—**Prati-marsha Nasya** when to be used—Its effects.—Specific use of **Sneha-Nasya**—**Kavala-graha** (Gargles)—Classification—Mode of application—Their uses—**Kavala** and **Gandusha** distinguished—How long **Kavala** should be retained—Symptoms of satisfactory, deficient and excessive Gargling.—**Prati-sārana**—Its classification and effects . 653—671.

End of the Contents of the **Chikitsita Sthāna**.

KALPASTHĀNA.

(SECTION ON TOXICOLOGY).

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CHAPTER I.

The mode of Preserving Food and Drink from the effects of Poison.—The necessary qualifications of a Superintendent of the Royal Kitchen—The necessary features of a Royal Kitchen—Characteristic features of a Poisoner—Indications of poisoned food and drink, etc.—General treatment.—The mode of preparing Soup, etc. .. 673—684

CHAPTER II.

The Indications (Effects, Nature and Operations) of Sthāvara Poisons.—Sthāvara Poison—Its source—Names of the different Vegetable and Mineral poisons—Effects of poison on the Human organism—Effects of Bulb poisons—Specific properties and actions of Bulb-poisons—Definition of Dushi-visha—Symptoms of weak and slow poisoning—Derivative meaning of Dushi-visha—Symptoms of the different stages of Sthāvara Poisoning—The medical treatment—Keshātakjādī-Yavāgu—Ajeya Ghrita—Vishāri Agada—Treatment of the supervening Symptoms of Poisoning—Prognosis . . . 685—694.

CHAPTER III

The Subject of (the nature, virtue, etc of) Animal Poisons.—Different locations—Characteristic features and purifications of poisoned Water—Poisons in the Atmosphere and its purification—Mythological origin of Poison—Properties of Poison—Nature and Location of Snake-poison—General treatment of poisoning—Symptoms of taking poison internally—Fatal bites—Prognosis. . . 695—702

CHAPTER IV

The Specific Features of the Poison of a Snake-bite.—Classifications of Snakes—Classifications of Snake bites—Their specific Symptoms—Characteristic features of the different species of Snakes—Features of the different Castes amongst Snakes—Particular Habits of the different kinds of Snakes.—Names of the different species of Darvī-kara Snakes—Names of

the different species of Mandali Snakes—Names of the different species of Rájumán Snakes—Names of the different species of Nirvisha Snakes—Names and Origin of the different species of Vaikaraja Snakes—Sub-families of the Vaikaraja Snakes—Characteristic features of Male and Female Snakes—Features of their bites—General and specific symptoms of a bite by a Darvi-kara Snake—Specific symptoms of a bite by a Mandali Snake—Specific symptoms of a bite by a Rájumán Snake—Specific symptoms of bites by Snakes of different Sexes and Ages, etc.—Symptoms of the different stages of poisoning from the bites of a Darvi-kara Snake—Different stages of poisoning from the bite of a Mandali Snake—Different stages of poisoning from the bites of a Rájumán Snake—The *Vegdūtara* (or the intervening) Stages—Different Stages of poisoning in cases of Lower Animals—Different stages of poisoning in cases of Birds. . 703—714.

CHAPTER V.

The medical treatment of Snake bites.—General treatment of Snake-bites—Mantras (Incantations)—Blood-letting in Snake-bites—Specific treatment of the bite by a Hooded (Darvi-kara) Snake, a Mandali Snake and a Rájumán Snake—Contra-indication to blood-letting in cases of Snake-bites—Dosage of Collyrium, etc., to be resorted to in cases of different Beasts and Birds—General dosage of medicines in cases of Snake-bites—Specific treatment of poisoning according to the Physical Symptoms—Specific treatment of the different Supervening Symptoms—Remedy for the aggravated Doshas due to Poison—Medical treatment of persons made unconscious from the effects of a Fall or Suspended Animation—Symptoms of wounds from Poisoned Darts, etc—Treatment of a Poisoned Wound—Recipe of different Agadas—Mahágada—Ajitágada—Tárlshyágada—Rishabhágada—Sanjivana Agada—Darvi-kara Rájula-visha-hara-Agada—Mandal-visha-hara Agada—Vams'a-tvagádi Agada—Pancha-s'irisha Agada—Sarva-Kámkra Agada—Ehasara Agada. . 715—727.

CHAPTER VI

Cases of Rat-poisoning—Different Varieties of Rats—General Symptoms of Rat-poisoning—Specific symptoms and treatment of Rat-poisoning—General treatment—Causes of Rabies—Symptoms of Hydrophobia—Prognosis—Symptoms of Jala-trása—Its treatment—Treatment of bites by rabid-dogs—Treatment of teeth and nail-scratching. 728—736.

CHAPTER VII

Treatment with the Sounds of a (medicated) Drum, etc., possessed of Anti-venomous Virtues —Ksharágrāda—Its Uses and Therapeutic Effects—Kalyāṇaka-Ghṛita—Amṛita-Ghṛita — Mahā-sugandhi Agadī—Rules of Diet and Conduct.—Symptoms of Elimination of Poison
737—741.

CHAPTER VIII.

On insects, i e , the measures, etc. to be adopted in cases of Insect-bites, etc. —The Germination and Classification of Insects — Insects of Vātaja, Pittaja, Kaphaja and Sānnipātika temperaments — Symptoms of their Bites—The Kanabha class of Insects—The Gaudheyaka class of Insects—S'ata-padi—Manduka (Frogs)—Pipilikā (Ants)—Makshikā (Stinging Flies)—Mas'akas (Mosquitoes) —Incurable classes—Treatment of a bite by strong and acute-poisoned Insects—Recipes of Remedies in different cases.—Origin and Classification of Scorpions—Specific traits and characteristics of Mild poisoned Scorpions, Madhya-visha Scorpions and Tikshna-visha Scorpions—Treatment of Scorpion-bites — Spider-bites — Development of Luta'-poison—Its Potency—Location — Characteristics of Poison according to its seat in the body of a Spider—Mythological Account of the Origin of Luta' —The different names of Spiders and the general Symptoms of their Bodies— Specific Symptoms of Spider-bites and their Treatment—General Remedies—Specific symptoms of the Incurable cases of Spider-bites—Their treatment —Surgical Treatment—Treatment of Ulcers incidental to the Bites by Insects or Snakes.
742—762.

End of the Contents of the Kalpa Sthāna.

THE SUS'HRUTA SAMHITĀ NIDĀNA STHĀNAM.

CHAPTER I.

Now we shall discourse on the **Vāṭavyādhi-**
(diseases of the nervous system) **Nidānam***

Metrical text:—Having clasped the feet of the holy Dhanvantari, who had arisen out of the primordial ocean with the pitcher of ambrosia on his head, and who was the foremost of all knowers of truth, Sus'hruta interrogated him as follows —“Tell me, O thou, the foremost of discoursers, all about the different locations and functions of the bodily Vāyu (nerve force), both in its normal and agitated conditions, (as well as when it changes its natural seat through a concourse of disturbing or aggravating causes) Instruct me on the nature of distempers, which result from its deranged condition ” 2

The holy Dhanvantari, the greatest of all healers, having listened to the foregoing words of Sus'hruta, replied as follows —This vital Vāyu (nerve force), which courses through the body, is self-begotten in its origin, and

* The term Nidānam, usually translated as Pathology, is meant to include factors, which fall within the respective provinces of Pathology, Œtiology, Symptomology and Pathognomy as well. For the meaning and functions of Vāyu see Introduction vol. I. pp xh.—xlii.

is regarded as identical with the divine energy of eternal life (God), inasmuch as it is unconditional and absolute in its actions and effects, eternal and self-originated, and is subtle and all-pervading (like the sky and the atoms). It is the primary factor, which determines the principle of cause and effect in all forms of created things, whether mobile or immobile. It is so called (Vāyu) from the fact of its coursing (skī Vā—to move) throughout the universe. It determines the growth, origin and disintegration of all animated organisms, and as such, it receives the homage of all created beings. Although invisible in itself, yet its works are patent or manifest. It is cold, light, mobile, dry and piercing, and follows a transverse course. It is characterised by the two attributes (proper-sensibles or Gunaś) of sound and touch. It abounds in the fundamental quality of Rajas (principle of cohesion and action), is of inconceivable prowess, propels all the deranged or obstructing principles (Doshas) in the organism, (or in other words, is primarily concerned with the deranged principles of the body which are pathogenic in their actions). It is instantaneous in its action, and radiates or courses through the organism in constant currents. It has its primary field of action in the intestinal tract (Pakvādhāna) and the rectum (Guda). In its deranged state, it is the principal factor, which, (in combination with the deranged Pittam and Kapham), lies at the root of all diseases, and is accordingly termed the king of diseases (Rogarāt). 3

The action of Vāyu in its normal State:—Now, hear me describe the symptoms, which mark the Vāyu, as it courses through the organism. The Vāyu, in its normal or undisturbed condition, maintains a state of equilibrium between the different Doshas and the root principles of the body (Dhātu), it further

tends to maintain uniform state in the metabolism of the body, (protoplasmic, Agni*) and helps the organs of sense-perception in discharging their specific functions. The bodily Vāyu, like the Pittam in the organism, is grouped under five different subheads according to the difference in its functions and locations, and is classified as the Prāna, Udāna, Samāna, Vyāna and Apāna †. These five classes of Vāyu, located in their specific regions, contribute towards the integration and maintenance of the body 4—6

The Prāna Vāyu:—The Vāyu, that courses in (governs) the cavity of the mouth, ‡ is called the Prāna, its function being to force down the food into the cavity of the stomach, and to assist the different vitalising principles of the body (such as the internal heat or fire etc.) in discharging their functions in life, and to contribute to the general sustenance of the body. A deranged condition of this particular kind of Vāyu (Prāna) is usually followed by hic-cough, dyspnoea and other kindred distempers 7.

The Udāna Vāyu:—The most important of the vital Vāyus, which courses (sends its vibrations) upward, is called the Udāna. It produces speech, song, etc. In its deranged state it brings on diseases which are specifically confined to regions lying above the clavicles 8.

The Samāna Vāyu:—The Samāna Vāyu courses in (governs) the stomach (Āmāshaya) and in the

* See Introduction Vol I p.p XLVIII—XLIX Mahāmahopādhyāya Dvārakā Nātha Kavirāṇa interprets this Agni as digestive heat (*Jatharāgni*)

† The Prāna Vāyu is identical with the energy of the nerve centre in the medulla; the Udāna with that of the one which is situated in the speech centre. The Samāna is same as the energy of the epigastric plexus, the Udāna is same as the energy of the Motor Sensory Nerves, and the Apāna is identical with the force of the Hypogastric plexus

‡ The field of its action includes the regions of the heart, throat, head and the nose,

region of intestines (Pakvābhaya) Its functions consist in digesting the chyme brought down into the intestines in unison with the digestive ferment (Agni), and especially in disintegrating its essence from its refuse or excreted matter. A deranged or aggravated condition of the Samāna Vāyu causes dysentery, Gulma, and impaired digestion, etc. 9

The Vyāna Vāyu :—The Vāyu known as the Vyāna courses (acts) through the whole organism, and its functions consist in sending the lymph chyle etc all through the body and in helping the out-flow of blood (Asrik) and perspiration. Five kinds of muscular movements* are ascribed to the action of the Vyāna Vāyu, a deranged condition of which is generally attended with diseases which are not confined to any particular region, member, or organ of the body, but are found to affect the whole organism (such as, fever, etc) 10

The Apāna Vāyu :—The Vāyu known as the Apāna acts in the lower region of the intestines (Pakvādhāna) Its functions consist in bearing down the foetus and the faeces and in evacuating the urine, semen and catamenial blood. An enraged condition of this Vāyu tends to bring on serious diseases, which are peculiar to the urinary bladder and the distal portion of the large intestine (Guda). An aggravated condition of both the Vyāna and Apāna Vāyus may produce Pramcha and disorders of the seminal fluid, while a simultaneous excitement of the five vital Vāyus leads to a sure and speedy termination of life. 11-12

Now we shall describe the nature of diseases, brought about by the localization of the variously aggravated Vāyus in the different parts of the body—In the cavity

* Such as expansion, flexion, lowering down and lifting up or lateral thrusting of any part of the body.

of the stomach (*Āmāshaya*) the deranged or aggravated *Vāyu* gives rise to vomiting, vertigo, epileptic fits, thirst and pain at the sides (*Pāśva Śula*) and about the region of the heart (*Hridgraha*) In the intestines (*Pakvāshaya*) the enaged or disturbed *Vāyu* gives rise to a rumbling in the intestines, a piercing pain about the region of the umbilicus, scanty and painful urination and stool, or their entire suppression (*Ānāha*), and pain about the region of the coccyx (*Trika*) 13—15. Similarly, incarcerated in the sense-organs, such as the ears, etc it tends to deprive them of their respective faculties. In the skin (lymph chyle) it produces a discolouring of the complexion, parchedness and twitching in the skin, and causes a complete local anæsthesia, giving rise to a tingling, piercing pain in the skin, which spontaneously bursts, or becomes marked with cracks and fissures. Similarly, the aggravated *Vāyu* interfering with the principle of blood gives rise to ulcers In the flesh, it produces painful nodes and tumours (*Ganthu*), while in the principle of fat it brings on almost painless tumours (*Granthi*) unattended with any kind of ulcer Incarcerated in the veins &c (*Sirā*) it produces a stiffening or painful contraction, or a varicose or neuralgic condition ; in a ligament (*Snāyu*), it produces numbness (anæsthesia), palsy, aching pain and convulsive jerks , in a long joint, it tends to deprive it of its contractibility and produces a painful inflammatory swelling (about the affected part) In the bones it produces a wasting (atrophy) of the bones which crack and begin to spontaneously burst, attended with the characteristic bone-ache Again in that important principle of life, the marrow, it tends to dry it up and produces a sort of pain, extending all over the body which knows no respite or abatement. Similarly, in the principle of semen it tends to produce a scanty,

defective, or excessive emission of that vital fluid, or a complete stoppage thereof 16—23.

The Vāyu, thus disturbed and agitated, affects in succession the lower and the upper extremities of the body, and the head, or extends all over the body and deranges all its root-principles (Dhātu) The symptoms, which mark such conditions of the body, are numbness (paralysis), convulsive contortions of the limbs (Ākshhepa), anæsthesia, and various kinds of pain (Śula), and swelling (Śōpha) of the body The deranged Vāyu, having entered the natural seats of the Pittam or Kapham, develops symptoms, which are peculiar to either of them, and gives rise to numerous diseases 24—25

The symptoms, which characterise the union of the deranged Vāyu with the Pittam (in its particular seat) are a burning sensation, heat, thirst, and loss of consciousness, in addition to the symptoms of the Vātaja disease so generated in that particular part of the body, while a similar union with the Kapham develops coldness, swelling and heaviness (of the affected part) The disturbed or agitated Vāyu in union with the principle of blood gives rise to a sort of pricking pain (pins and needles in the affected locality), which can not bear the least touch, or is marked by complete anæsthesia, and symptoms, peculiar to the deranged Pittam, follow in its train 26—28

Vomiting, and a burning sensation, etc in the body, mark the instance when the Prāna Vāyu is surcharged (Āvṛta) with the Pittam, while weakness, lassitude, somnolence and a general discolouring of the complexion (D R,—loss of taste) characterise a case when it is surcharged with the deranged Kapham A burning sensation in the body, loss of consciousness or epileptic fits, and a sense of giddiness (vertigo) and

physical languor are the indications, which distinguish a case of the Udāna Vāyu being surcharged with the Pittam, while a stoppage or absence of perspiration, appearance of goose-flesh on the skin, impaired digestion, coldness and numbness of the affected part characterise a case of the same being surcharged with the Kapham 29—32.

Copious flow of perspiration, heat with a burning sensation in the body, and epileptic fits indicate a case when the Samāna Vāyu has become united with the Pittam; while a copious flow of stool and urine, and an excess of mucous secretion (Kapham) from the nose (fluent coriza) etc and homipilation mark a case, where it has become saturated with the Kapham. 33—34

Heat and a burning sensation in the affected part and a profuse menorrhagia mark a case when the Apāna Vāyu becomes surcharged with the Pittam, while as a sense of heaviness in the lower limbs characterises a case when it becomes overcharged with the Kapham. 35—36.

[Symptoms such as,] burning and jerking in the limbs, and a sense of physical languor become manifest in the event of the Vyāna Vāyu being surcharged with the Pittam, while a general heaviness of the limbs, stiffness or numbness of the bone-joints, and an incapability of locomotion indicate the fact of its being surcharged with the Kapham. 37—38.

The Nidānam of Vāta Raktam :—

An over-indulgence in grief, excessive sexual intercourse, inordinate physical exercise, drinking large quantities of wine, observance of a regimen of diet and conduct in a particular season of the year which is improper to it, use of articles of food which are not congenial to one's own temperament and an improper or

baneful use of such oleaginous substances (as oil, clarified butter etc) are the factors, which vitiate in common the blood and Pittam of a person. The foregoing causes especially tend to vitiate or agitate the Váyu and blood in persons of delicate constitutions, or in corpulent persons, or in those who observe a form of perfect continence 39

The vital Váyu becomes enlaged or agitated by excessive riding on horses, camels or elephants or through the lifting or carrying of great weights, etc., or by an inordinate indulgence in things which are possessed of the specific virtue of enlaging or aggravating that vital principle. On the other hand, an over-indulgence in such articles of food as are heat-making in their potency, or a surfeit of edibles largely composed of sharp, acid or alkaline substances, as well as a large consumption of potherbs etc., or an exposure to heat tends to vitiate the blood of the organism, and which, on account of such contamination, tends to speedily obstruct the passage of the fleet-coursing Váyu. The Váyu, thus impeded in its course, becomes more and more agitated each moment, and is prone to speedily agitate the blood in a similar way. The antecedence of the term "Váta" or "Váyu" in the nomenclature of the disease (Váta-Rakta) is owing to the precedence accorded to the action of the deranged Váyu in bringing about the malady, although it effects this in concert with the vitiated blood of the organism 40

Similarly, the disease brought about by the agitated Pittam, in conjunction with the vitiated or agitated blood, is called the **Pitta-Raktam**, while the one incidental to the combination of the deranged Kapham with the vitiated blood is called **Kapha-Raktam**. In a case of **Váta-Raktam**, the legs, or the lower extremities can

not bear the least touch (Hyperæsthesia) and a sort of pricking, piercing pain (pins and needles) is experienced in those regions. The legs become withered or atrophied and lose all sensibility to touch. In a case of **Pitta-Raktam**, the legs become extremely red, hot, soft and swollen, characterised by a sort of indescribable burning sensation. In a case of **Kapha-Raktam**, the legs become swollen and numbed. The swelling assumes a whitish hue and feels cold to the touch, and is accompanied by excessive itching. In the **Sánnipátika** or **Tridoshaja** form of **Dushta-Raktam**, the legs exhibit symptoms, which are respectively peculiar to all the three preceding types. 41—43.

Premonitory Symptoms:—In the incubative stage of the disease the legs perspire and become cold and flabby, or (on the contrary), the local perspiration is stopped and the legs become hot and hard. Moreover, a pricking pain is experienced in the affected parts which are marked by complete anæsthesia, heaviness, or heat, and discolouring of the skin. The disease creeps in either from the lower extremities, or in some cases, first affects the upper ones and gradually extends all over the body like an enraged rat-poison.

Prognosis:—The form of the disease in which the skin of the part lying between the instep and the knee-joint becomes abraded or spontaneously bursts open, exuding pus and blood, attended with loss of strength (*Prána*) and flesh, curvature of the fingers, and eruptions of nodules, should be regarded as incurable, while a case of one year's standing admits only of palliative measures. 44.

The enraged or agitated *Váyu*, while coursing swiftly through the *Dhamanis* (nerves) of the body, shakes it in quick succession, and a disease, (exhibiting such

symptoms as shaking or convulsive jerks), is originated which is called *Ākshepaka** (spasms, convulsions) The form of the disease, in which the patient falls to the ground, at intervals, is called *Apatānaka* (Epilepsy without convulsions) The aggravated or agitated *Vāyu*, charged with an abnormal quantity of *Kapham*, sometimes affects and stuffs the entire nervous system, and gives rise to a form of disease, which is called *Dandā-patānakam*† (Epilepsy with convulsions), inasmuch as it deprives the body of its power of movement and flexibility, making it stiff and rigid like a rod (*Danda*). 45—46.

The disease but rarely yields to medicine and, is cured in rare instances only with the greatest difficulty; its characteristic symptom being a paralysis of the jaw-bone, which makes deglutition extremely difficult The disease in which the enraged *Vāyu* bends the body like a bow is called *Dhanushtambha* (Tetanus) The disease admits of being divided into two distinct types accordingly as the body of the patient is curved internally (*Antarāyāma*, lit:—inwardly or forwardly extended, *emprostotonos*), or externally (*Vahirāyāma*, lit.—extended or bent on the back, resting on his heels and occiput—*Opisthotonos*) When the extremely enraged and powerful bodily *Vāyu* (nerve-force), accumulated in

* The patient suffers from vanishings (*līnayatī*) and loss of consciousness through the instrumentality of the enraged and aggravated *Vāyu*, hence the disease is so named—*Gayaddsa*.

† Jejjada holds that the enraged *Vāyu*, in unison with the deranged *Kapham*, gives rise to another kind of convulsions (*Ākshepaka*) which he has denominated as *Dandā-patānakh* which, exhibits such symptoms as coldness, swelling and heaviness of the body on account of its being brought about by a concerted action of the deranged *Pittam* and *Kapham*. Several authorities aver that there are four distinct types of *Ākshepakah*, such as *Dandā-patānakh*, *Antarāyāmah*, *Vahirāyāmah*, and *Ākshepakah* of traumatic (*Abhigātaja*) origin.

the regions of the fingers, insteps, abdomen, chest, heart and throat, forcibly draws in the local ligaments (Snáyu), the body becomes contracted and bent forward, bringing about a curvature of the inner trunk. The disease in this form is called *Antaráyāma Dhanushtambha*. The movements of the eyes become impossible, which become fixed in their sockets, the jaw-bones become paralysed, the sides are broken, and the patient ejects (at intervals quantities of) slimy mucous (Kapham). These are the features which mark the first type (*Antaráyāma Dhanushtambha*). On the contrary, when the same enraged *Váyu*, centred or lodged in ligaments which traverse the posterior side of the body, attracts them violently, the body is naturally bent backward. The patient experiences a sort of breaking pain at the chest, waist and thighs, (which are ultimately broken). The disease is called *Vahiráyāma*, and should be looked upon as beyond the pale of all medicinal treatment 47—50

Four types of *Ákshepaka* are usually recognised in practice such as, the (1) one incidental to the concerted action of the enraged bodily *Váyu* and *Kapham* (2), the one brought about through the union of the enraged *Váyu* with the deranged *Pittam*, (3), the one due to the single action of the agitated *Váyu* (4) and the one due to any external injury or blow (*Abhighátaja*).^{*} An attack of *Apatānakah* due to excessive hæmorrhage, or following closely upon an abortion or miscarriage at pregnancy (difficult labour), or which is incidental to an external blow or injury (traumatic), should be regarded as incurable. 51—52.

* *Brahma Deva* designated the four types of the disease, as *Apatānakah*, *Samsrishi* *Ákshepakah*, simple *Ákshepakah* and the *Abhighátaja* (traumatic).

The disease, in which the extremely agitated Váyu affects the nerve chains (Dhamanis) which spread either in the left or in the right side of the body, whether in the upward, downward, or lateral direction, making them lax and vigourless, and in which the joints of the other side of the body become useless and inoperative, is called **Pakshágháta** (Hemiplegia) by eminent physicians. The patient, the whole or half of whose body has become (almost) inoperative and lost all sensibility, but who retains his consciousness so long as there remains the least vestige of vitality in the affected part, suddenly falls down and expires. 53—54.

Prognosis:—A case of **Pakshágháta** (Hemiplegia), brought about through the single action of the enaged or agitated Váyu of the body, can be cured only with the greatest care and difficulty. A case of the same disease, engendered by the aggravated Váyu in conjunction with the deranged Pittam or Kapham, proves amenable to medicine (Sádhyā). It becomes incurable when caused through the waste of the root principles (Dhātu) of the body 55.

Apatantrakah (Convulsions) —The Váyu, aggravated (by its specifically exciting factors and principles) and dislodged from its natural seat or receptacle in the body in consequence thereof, courses upwards and finds lodgment in the regions of the head, heart and temples. It presses upon those parts and gives rise to convulsive movements of hands and legs, or at times bends them down.

Symptoms:—The patient lies with his eyes closely shut, or stares with a sort of fixed or vacant gaze, the eyes remaining fixed or immovable. The patient loses all perception, and groans. Respiration becomes difficult, or symptoms of temporary asphyxia

and unconsciousness set in. Consciousness and a normal condition of the organism return with the passage of the enraged Váyu from the heart, while on the other hand the patient relapses into unconsciousness simultaneously with the envelopment of the heart with that enraged and Kapha-saturated Váyu. This disease is called *Apatantrakah* and is ascribed to the action of the enraged Váyu sucharged with the deranged Kapham 56

Manyástambha:—The local Váyu, agitated through such causes as sleep in the day time, reclining with the neck on an uneven place or pillow, gazing upward for a considerable length of time, or looking aside in a contorted way, and enveloped in the deranged Kapham, gives rise to the disease known as *Manyástambha* (wry neck or torticollis) 57

Arditam (Facial Paralysis) —*Pregnant women, mothers immediately after parturition (*Sutiká*), infants, old and enfeebled persons are most prone to fall victims to this disease. It has been also known to result from excessive hæmorrhage or loss of blood. The local Váyu, extremely enraged or aggravated by continuous talking in an extremely loud voice, chewing of hard substances, loud laughter, yawning, carrying extremely heavy loads, and lying down in an uneven position on the ground, finds lodgment in the regions of the head, nose, upper lip, chin, forehead and the joints (inner cornea) of the eye, and produces the disease called *Arditam* by distorting the face

Symptoms:—The neck and half of the face longitudinally suffer distortion and are bent. The head shakes; the power of articulating speech is lost, and the

* The portion of the text included within asterisks has been rejected by Jejjadácháryya as spurious

cyes are distorted into a variety of shapes. The portions of the neck and the chin, as well as the teeth on the affected side become painful.

Premonitory Symptoms :—The disease generally commences with shivering, horripilation, cloudiness of vision, upcoursing of the bodily Vāyu and anæsthesia, a pricking pain in the affected locality, numbness or paralysis of the jaw-bone, or of the cervical muscles of the neck. Physicians, conversant with the *Ætiology* of diseases, call it *Arditam* (Facial paralysis). **Prognosis** —A case of *Arditam*, appearing in an extremely enfeebled or emaciated patient, or exhibiting such symptoms as a winkless vision, inarticulate speech which hardly seems to come out of the throat, excessive palsy of the face, as well as the one of more than three years' standing, should be deemed as incurable. 58

Gridhras'ī (Sciatica) —The disease in which the two great nerve-trunks (*Kandará*), which emanating from below the lower extremity of the thigh reach down to the bottom of the insteps and toes, and become stuffed or pressed with the enraged Vāyu, thus depriving the lower extremities of their power of locomotion, is called *Gridhras'ī*. 59

Vis'vachi (Eibe's paralysis or Brachial neuralgia).—The disease in which the enraged Vāyu affecting the nerve-trunks (*Kandará*) which run to the tips of fingers from behind the roots of the upper arms, making them incapable of movement and depriving them of their power of flexion or expansion is called *Vis'vachi*.* 60.

Kroshtukas'irsha (Synovitis of the knee-joints) —An extremely painful swelling in the knee-

* When the aforesaid nerve of a single arm is affected the disease is restricted to it alone, while it attacks the both when both their nerves are affected.

joints, which is originated through the concerted action of the deranged Vāyu and the vitiated blood is called Kroshtukasīrsha from the fact of its resembling the head of a jackal (Kroshtuka) in shape 61.

Khanja (Lameness) —The disease proceeds from the drawing up of the nerve trunks (Kandarā) of a leg by the deranged Vāyu lying about the region of the waist. When both the legs are similarly affected, the patient is called a Pangu. He, whose legs tremble before starting for a walk and who afterwards manages to go on limping is called a Kalāya Khanja one in whom the bone-joints become loose 62—63.

Vāta Kantaka : —The local Vāyu, enraged by making a false step on an uneven ground, finds lodgment in the region of the ankle (Khudaka, instep according to others), thus giving rise to a disease which is called Vāta Kantaka. The burning sensation in the soles of the feet caused by the enraged local Vāyu, in conjunction with the deranged Pittam and blood, is called Pāda-dāha, which is generally seen to afflict persons of pedestrian habits. When the legs are deprived of all sensibility of touch, and a sort of tingling pain is experienced in them it is termed Pādaharsha, which is due to the deranged action of the Vāyu and Kapham. The disease in which the enraged local Vāyu dries up the normal Kapham lying about the shoulder-joints is called Ansa-shoshaka. The form in which the aggravated local Vāyu contracts the nerves of the arms is called Avavāhuka* 64—67

Vādhiryayam (deafness) —The disease occurs only when the deranged Vāyu, either singly or sui-

* The Ansa shosha is due to the single action of the enraged Vāyu, while Ava-vāhuka is due to the concerted action of the deranged Vāyu and Kapham.

charged with the Kapham, stuffs the sound-carrying channels (Srota) of the ears 68.

Karna s'ulam :—The disease in which the deranged Váyu causing a piercing pain in the regions of the cheekbones, head, temples and neck, gives rise to a sort of aching pain in the tympanum, is called Karna-s'ulam (otitis) The local Váyu, deranged and saturated with the Kapham stuffing the nerves (Dhamanī) which conduct of the sound of speech, produces complete (in some cases partial) loss of the power of speech—*e.g.* Muka (dumbness), Minmina (nasal voice) and Gad-gada (indistinct speech) 69—70

A sort of pain, which (rising from the bowels or the urinary bladder and ranging downward) gives rise to a bursting sensation in the regions of the anus and the genitals, is called Tunī, whereas the one, rising upward from the preceding parts and extending up to the region of the intestines, is called Prati-tunī. A distension of the abdomen (Udara), attended with the incarceration of flatus (Váyu) and an intense pain and rumbling in its inside, is called Ádhmánam (Tympanites). When it first affects the stomach (Ámāsāya) and is unattended with an oppressive feeling about the heart and pain at the sides' it is called Pratyádhmánam. The Váyu saturated with the deranged Kapham causes the preceding type of distemper. 71—74.

A knotty stone-like tumour (Granthi) of considerable density, whether fixed or mobile, and appearing below the umbilicus, and having an elevated shape which is always found to be extended in an upward direction, is called a Vátásthilá, (which) as its name implies, is due to the action of the local deranged Váyu. The tumour, thus formed, obstructs the emission of flatus and impedes the evacuation of fæces. A tumour of similar shape,

appearing laterally or across the region of the abdomen (Jatharā) and obstructing the passage of stool, urine and flatus (Vāta) is called a **Pratyassthilā** 75—76.

Thus ends the first Chapter of the Nidāna Sthānam in the Sushruta Samhitā, which treats of the Nidānam of the diseases of the nervous system.

CHAPTER II.

Now we shall discourse on the **Nidānam** of **Ars'as** (Hæmorrhoids). 1.

Hæmorrhoids may be divided into six classes *vis* —
(i) *Vātaja* (due to the action of the deranged Vāyu),
(ii) *Pittaja* (due to the action of deranged Pittam), (iii)
Kaphaja (due to the action of deranged Kapham), (iv)
Raktaja (due to the action of the vitiated blood), (v)
Sannipātaja (due to the concerted action of the deranged
Vāyu, Pittam and Kapham) and (vi) *Sahaja* (congenital).

Pathology :—The deranged Vāyu, Pittam, etc.
enlarged by their specific aggravating causes, or by such
acts or conduct as partaking of food composed of in-
compatible substances, eating before the previous meal
has been digested, inordinate sexual intercourse, sitting on
the haunches, excessive riding, and the voluntary suppres-
sion of any natural urging of the body, either severally
or in combination of two or three Doshas, or vitiating
the blood of a person, who observes no moderation in
food and drink &c, become dislodged from their natural
seats in the body [according to the law of *Prasāranam*
(expansion and change of place by a deranged organic
principle)] and are carried down through the large
intestine (*Pīadhāna Dhamanī*) into the descending colon
and getting lodged therein, give rise to growths of
polypus or fleshy condylomata, which are known as **piles**.
These growths chiefly appear in persons suffering from
impaired digestion (*Agni*), and gain in size through
friction with the wearing apparel, weeds, wood lumps
of clay or stone, or by contact with cold water. 3

The lower end of the large intestine, which passes
into the flexure of the rectum and measures four and

a half fingers in length, is called the Gudam (lit—the channel of fecal matter), the interior of which is provided with three spiral grooves. Each of these grooves or ring-like muscles lie a finger and a half apart, and are respectively known as Pravāhini, Visarjani and Samvāhani, or the grooves of out-flow, defecation and closure of the anus (sphincter ani), covering a space of four fingers and having laterally an elevation of one finger's width 4

Metrical Texts :—These grooves are like the involuted indentures of a conch shell, situated one above the other, coloured like the palate of an elephant. A part of the channel, half a finger's width in length as it is usually measured from the outer hairy orifice of the rectum, is called the anus (Gudoushtha). 5—6.

The first of the aforesaid grooves or rings lies about a finger's width apart from the orifice of the anus.

Premonitory Symptoms :—A non-relish for food, a tardy and difficult digestion of food (brought into the stomach), acid eructations, a sense of weakness in the thighs, a rumbling sound in the intestines, emaciation of the body, frequent eructations, swellings around the eyes, a croaking sound in the intestines, cutting pain in the rectum (Guda), apparent indications of an attack of phthisis, jaundice, dysentery, cough, dyspnoea, vertigo, somnolence, excessive sleep, weakness of the organs (Indriya), are indications which predict the advent of this disease, and which become more marked with its progress. 7.

The Vātaja Type :—Piles, due to the action of the aggravated Vāyu, are non-exuding, rose-coloured, and uneven in their surface. They resemble the Kadamba flowers in structure and are either tubular or sharp-pointed like a needle, sometimes assuming the shape of

the wild Tundikeri flower. The stool of a hæmorrhoid patient of this type becomes excessively hard, and can be evacuated only in a sitting posture, with the greatest pain and difficulty. An excruciating pain is experienced in the regions of the waist, back, sides, anus, umbilicus and the genitals. Symptoms peculiar to Gulma, Ashthilá, enlarged spleen and abdominal dropsy add to the distress of the patient, whose skin, nails, eyes, teeth, face, urine and stool also assume a dark black colour 8

The Pittaja Type :—Piles, brought on through the action of the deranged Pittam, are slender, blue-topped, shifting in their nature, yellowish in their hue, or are coloured like shreds of liver, resembling in shape the tongue of the Śuka bird. They are thick at middle, like barley grains, or resemble the mouth of leeches and secrete a sort of slimy exudation. The stool is marked with blood, and the patient complains of a painful, burning sensation (in the rectum) at the time of defecation. Fever, with a burning sensation and thirst, and epileptic fits, supervene. The skin, nails, eyes, face, teeth, stool, and urine of the patient assume a yellow hue. 9

The Kaphaja Type :—Piles, due to the action of the deranged Kapham, become white, are sunk about their roots, and are hard, round and glossy. They assume a greyish hue and resemble the teats of a cow or the stones of the Kanna, or of a Panasa fruit. These piles do not burst, nor do they exude any sort of secretion. The patient feels an irresistible tendency to scratch the excrescences. The stools become copious in quantity and are charged with mucous (Śleshmá), resembling the washings of meat. Indigestion, fever with shivering (Śita-jvara), and heaviness of the head and œdema

with a non-relish for food are the symptoms which become manifest with the progress of the disease. The skin, finger nails, eyes, teeth, face, stool and urine of the patient also assume a white colour 10

The Raktaja Type :—Piles (hæmorrhoids), having their origin in the vitiated condition of the blood resemble the sprouts of the Vata tree in shape and are of the colour of red coral, or the seeds (dark red) of Gunja berry. They exhibit all the symptoms, which are peculiar to the Pittaja type of this disease. Pressed hard by the constricted feces in their passage through the anus, they suddenly give rise to a hæmorrhage of vitiated (venous) blood, and symptoms characteristic of excessive bleeding are found to supervene. 11.

The Sannipāta Type :—In a case of hæmorrhoids due to the concerted action of the deranged Vāyu, Pittam and Kapham, symptoms characteristic of each of these *types* manifest themselves in unison. 12.

The Congenital Type :—Congenital hæmorrhoids (Sahaja Arsās) are usually ascribed to defects in the semen and ovum of one's parents and should be medicinally treated with an eye to the special deranged Doshas involved in the case. The polypi (in this type) are hardly visible and are rough and yellowish, with their faces turned inward. They are extremely painful. A person suffering from this type of piles gets thinner and thinner every day and eats but very little. Large veins (Sūā) appear on the surface of the body. The patient becomes infertile, the semen decreases in quantity, making the procreation of a small number of children possible only by him. The voice becomes feeble, the digestion is impaired, and disorders affecting the head

nose, ears and eyes follow. A croaking sound is heard in the intestines, attended with a rumbling in the abdomen. All relish for food vanishes and the region of the heart seems to be smeared with a kind of sticky paste (of mucous), etc 13

Authoritative verse on the subject :—

A qualified physician should undertake the medical treatment of hæmorrhoids which occur either about the outer or the middle groove of the rectum, (in as much as they prove amenable to medicine) A polypus, appearing about the innermost ring or groove of the rectum, should be treated without holding out any definite hope of cure to the patient 14.

Lingárs'as (Fig warts or condylomatous growths about the genitals) :—The deranged and aggravated Váyu etc, finding lodgment in the genitals, vitiate the local flesh and blood, giving rise to an itching sensation in the affected localities. The parts become ulcerated (through constant scratching) and the ulcers become studded with sprout-like vegetations of flesh (warts), which exude a kind of slimy, bloody discharge. These growths, or excrescences generally appear on the inner margin, or on the surface of the glans penis, in the form of soft, slender vegetations of skin, resembling the hairs of a small bush (Kuchaka). These vegetations ultimately tend to destroy the penis and the reproductive faculty of the patient

Bhagárs'as :—The deranged Váyu etc of the body, lodged in the vaginal region of a woman, gives rise to similar crops of soft polypi in the passage. They may crop up isolated at the outset, and (by coalescing) may assume the shape of a mushroom or an umbrella, secreting a flow of slimy, foul-smelling blood.

The deranged Váyu, etc. may further take an

upward course, and finding a lodgment in the ears, nose, mouth and eyes may produce similar warts in those localities. Warts, which crop up inside the cavities of the ears, may bring on earache, dumbness, and a foul discharge from those organs, while those (cysts) cropping up in the eyes will obstruct the movement of the eye-lids, giving rise to pain and a local secretion and ultimately destroy the eye-sight. Similarly, such growths in the nostrils produce catarrh, excessive sneezing, shortness of breath, headache, nasal speech and the complaint known as Putinasya. Such vegetations cropping up in and about the lips, palate or the larynx, tend to make the speech confused and indistinct. When appearing in the mouth, they impair the faculty of taste, and diseases which affect the cavity of the mouth follow. The excited Vyāna Vāyu, united with the aggravated Kapham, produces a kind of hard papillomatous growths on the skin (about the anus) which are called the Charmakilas (papillomata).^{*} 15.

Authoritative verses on the subject :

—These Charmakilas may be attended with a kind of pricking pain through an excess of the deranged Vāyu, whereas those which have their origin in the deranged Kapham (lymphatics) assume a knotty shape and become of the same colour as the surrounding skin. On the other hand, they become dry, black or white, and extremely hard through an exuberance of the deranged local blood and Pittam. 16

The symptoms of polypi, appearing in the neighbourhood of the anus, have been described in full, while the general characteristics of those, which are found to crop up around the genitals, have been briefly discoursed

^{*} According to others, Charmakilas may crop up on the skin of any part of the body.

upon An intelligent physician should ponder over the two groups of symptoms while engaged in treating a case of piles. A case of piles exhibiting symptoms peculiar to the two deranged Doshas is called the **Samsargajam**. Six distinct types of bio-Doshaja piles are known in practice.* 17

Prognosis :—A case of piles due to the concerted action of the three deranged Doshas of the body, (with its characteristic symptoms) but partially developed, may be temporarily checked (Yápya). Cases, which are of more than a year's standing, as well as those in which the hæmorrhoids are due to the concerted action of the two Doshas (Samsargaja), or are situated in the middle groove of the rectum, may be cured but with the greatest difficulty. Cases of the Sannipâtika or congenital (Sahaja) types should be given up as incurable. The Apána Váyu, in a person whose rectum is overrun with such polypus growths, tries to pass out through the anus, but is driven back upward, being obstructed in its passage by the vegetations, and then mixes with his Vyána Váyu, thus impairing (the five-functioned) fire (Pittam) in his body. 18-19

* Such as (1) the one due to the concerted action of the deranged Pittam and Kapham, (2) the one incidental to the simultaneous derangement of the Váyu and the Kapham, (3) the one brought about through the disordered condition of the Váyu and blood, (4) the one due to the combination of the deranged Pittam and Kapham, (5) the one produced by the concerted action of the deranged Pittam and blood, (6) the one which results from the combined action of the deranged Kapham and blood.

Thus ends the second Chapter of the Nidânasthânam in the Susrûta Samhitâ which deals with the Nidânam of piles.

CHAPTER III.

Now we shall discourse on the Nidānam of **As'mari** (urinary calculi). 1.

The disease admits of being divided into four several types, such as the Vātaja, the Pittaja, the Kaphaja and the Sukraja (Seminal) concretions. An exuberance or preponderance of the deranged Kapham should be understood as the underlying cause of all invasions of this disease. 2.

General ætiology :—The Kaphah of a man, who neglects to cleanse (Samsódhana) the internal channels of his organism, or is in the habit of taking unwholesome food, enraged and aggravated by its own exciting causes, is carried into the urinary bladder. Here it becomes saturated with the urine, and gives rise to the formation of concretions or gravels in its cavity. 3.

Premonitory Symptoms :—An aching pain in the bladder, with a non-relish for food, difficulty in urination, an excruciating pain in the scrotum, penis, and the neck of the bladder, febrile symptoms, physical lassitude, and a goat-like smell in the urine are the symptoms, which indicate the formation of gravel in the bladder. 4.

Metrical Text :—The deranged Doshas involved in a particular case respectively impart their specific colour to the urine, and determine the character of the accompanying pain. The urine becomes thick, turbid, and vitiated with the action of the aggravated Doshas, and micturition becomes extremely painful. 5.

Leading Indications :—A sort of excruciating pain is experienced either about the umbilicus, or in the bladder, or at the median rapé of the

perineum, or about the penis, during micturition when gravel is forming in the bladder. The urine is stopped at intervals in its out-flow, or becomes charged with blood, or flows out twisted and scattered like spray, leaving a sediment of clear, sandy, red or yellow particles of stone, which resembles a Gomedha gem in colour. Moreover a pain is experienced in the bladder at the time of running or jumping or in swimming, or while riding on horseback, or after a long journey. 6

The Śleshmās'mari:—Stone or gravel, originated through the action of the deranged Kapham, saturated with an excessive quantity of that Dosha by the constant ingestion of phlegm-generating (Śleshmala) substances, increases in size at the lower orifice of the bladder and ultimately obstructs the passage of the urine. The pressure and recoil of that incarcerated fluid on the walls of the urinary bladder gives rise to a kind of crushing, bursting, pricking pain in that organ, which becomes cold and heavy. A Kapha-originated stone or gravel is white and glossy, attains to a large size, to that of a hen's egg, and has the colour of the Madhuka flower. This type is called Śleshmās'mari. 7

The Pittaja As'mari:—The Kapham charged (dried) with the deranged Pittam becomes hard (condensed) and large in the aforesaid way, and lying at the mouth of the bladder obstructs the passage of the urine. The bladder, on account of the flowing back of the obstructed urine into its cavity, seems as if it has been exposed to the heat of an adjacent fire, boiling with the energy of an alkaline solution. A kind of sucking, drawing and burning pain is experienced in the organ. This type of As'mari is further marked by symptoms which characterise Ushna-vāta (stricture). The concretion is found to be of a reddish, yellowish

black colour like the stone of the Bhallátaka fruit, or it is coloured like honey. This type is called Pittaja Aśmari 8.

The Vátás'mari :—The deranged Kapham (mucus) inordinately saturated with the bodily Váyu, acquires hardness and gains in dimensions, and these lying at the mouth of the bladder obstructs the passage of the urine. The incarcerated fluid causes extreme pain in the organ. The patient constantly under severe pain gnashes his teeth or presses his umbilical region, or rubs his penis, or fingers his rectum (Páyu) and loudly screams. A burning sensation is experienced in the penis, and urination, belching and defecation become difficult and painful*. The concretions in this type of Aśmari are found to be of a dusky colour, rough, uneven in shape, hard, faceted and nodular like a Kadamva flower. This type is called Vátás'mari 9.

Infants are more susceptible to an attack of any of the three preceding types of Aśmari, inasmuch as they are fond of day sleep or of food composed of both wholesome and unwholesome ingredients, and are in the habit of eating before the digestion of a previous meal, or of taking heavy, sweet, emollient and demulcent food. In children the bladder is of diminished size and poor in muscular structure. These facts contribute to the easy possibility of the organ being gripped (with a surgical instrument) and of the stone being extracted with the greatest ease in cases of infantile Aśmari 10.

The Śukrás'mari :—Śukrás'mari or seminal concretions are usually formed in adults owing to the germination of semen in their organisms. A sudden or abrupt stoppage of a sexual act, or excessive coition tends to dislodge the semen from its natural receptacle

* Stool and urine can be voided only with the greatest straining.

in the body. The fluid thus dislodged, but not emitted, finds a wrong passage. The Vāyu gathers up the fluid (semen), thus led astray, and deposits it (in a round or oval shape) at a place lying about the junction of the penis and the scrotum and dries up the humidity with which it is charged. The matter, thus formed, condensed, and hardened, is called the seminal stone (Sukrásmari), which then obstructs the passage of the urine, giving rise to pain in the bladder, painful micturition, and swelling of the scrotum. The stone vanishes under pressure in its seat*. 11—12.

Authoritative verses on the subject:—Concretions, sands and sediments found to be deposited in the urine in a case of Bhashma-meha are but the modifications, or attendant symptoms of a case of stone in the bladder (Aśmari). The same group of symptoms and the same kind of pain are exhibited and experienced in a case of gravel (S'arkarāḍ) as in a case of stone (Aśmari) in the bladder. The local Vāyu coursing in its natural direction helps the discharge of calculi (Aśmari) with the urine in the event of they being extremely attenuated in structure. Particles of a stone broken by the Vāyu are called urinary calculi (S'arkarāḍ). A pain about the cardiac region, a sense of weakness and lassitude in the thighs, a gripping pain in the regions of the spleen and liver (Kukshi-sūla), a shivering sensation, thirst, hiccough or eructations, darkness or sallowness of complexion, weakness, emaciation with a non-relish for food and

* We can not but contemplate with admiration the fact that Sushruta was aware of the formation of seminal or spermatic concretions in the seminal vesicles through degenerative changes of spermatozoa and other secretions and their subsequent calcification as lately discovered by the savants of the West.—*Translator*

impaired digestion are the symptoms which are manifest in a gravel-patient. A gravel (*S'arkatā*) obstructed at the mouth of the urinary channel is detected by the following indications —*viz.*, weakness, lassitude, emaciation, cachectic condition of the body, pain over the hepatic region (*Kukshi-śūla*), a non-relish for food, sallowness of complexion, hot and high coloured urine, thirst pressing pain at the cardiac region and vomiting. 13

The bladder is situated in the pelvic cavity, surrounded on its different sides by the back, loin (*Katī*), umbilicus, scrotum, rectum (*Guda*), groins and penis. This organ is provided with a single aperture or opening and lies with its mouth downward, covered with nets of nerves (*Sirā*) and ligaments (*Snāyu*), in the shape of a gourd. The organ is extremely thin in structure; and thus situated within the pelvic cavity, it is connected through its mouth or external orifice, with the rectum, the penis, and the testes. It is also known by the name of *Malādhāra* (the receptacle of impure matter) and forms (one of) the primary seats of vital energy (*Prāṇa*)*. The urinary ducts (ureters) pass close by the large intestines (*Pakvāśaya*) and constantly replenish the bladder and keep it moist with that waste product of the system in the same manner as rivers carry their contributions of water into the ocean. These passages or ducts (which are two) are found to take their origin from hundreds of branches (or mouths *tubuli uriniferi*), which are not visible to the naked eyes, on account of their extremely attenuated structures and carry, whether in a state of sleep or wakening, the urine from below the region of the

* The text has *Prāṇdyatanam*, which means that an injury to the urinary bladder may be attended with fatal result.

stomach† (Amásāya) into the bladder keeping it filled with this important fluid of the body, just as a new pitcher, immersed up to its neck in a vessel full of water, is filled by transudation through its lateral pores. 14.

In the same way the Vāyu, Kapham and Pittam are carried into the bladder (through their respective ducts or channels), and in unison with the retained urine, give rise to the formation of stone, on account of the slimy character of the deposit produced. Stone is formed in the same way in the bladder as sediments are ultimately deposited from clear and transparent water at the bottom of a new pitcher which contains it. As the wind and lightning jointly condense the rainwater into hailstones, so the bodily Vāyu and Pittam (heat) jointly contribute to the condensation of the Kapham in the bladder and transform it into stone.

The Vāyu in the bladder, coursing in its natural downward direction, helps the full and complete emission of urine, while coursing in a contrary direction, it gives rise to various forms of maladies such as, Pramāṇa, strangury, as well as seminal disorders; in short, it produces any urinary trouble to which the bladder may be subjected. 15

† From the kidneys

Thus ends the third Chapter of the Nidāna Sthānam in the Sushruta Samhitā which treats of the Nidānam of urinary calculi.

CHAPTER IV.

Now we shall discourse on the **Nidānam** of **Bhagandaram** (fistula in ano and fistulari ulcers). 1.

The deranged Vāyu, Pittam, Kaphah and Sannipātah (a simultaneous derangement of the three bodily Doshas) and extraneous causes (such as a blow etc) give rise to the types of Bhagandaram known as Śataponaka, Ushtragriva, Parisrāvi, Samukāvaita and Unmargi. The disease is so named from the fact that it bursts the rectum, the perineum, the bladder and the place adjoining to them (thus setting up a mutual communication between them). The pustules, which appear in these regions are called as Pidakās in their unsuppurated stage, while they are called Bhagandaram when they are in a stage of suppuration. A pain about the sacral bone and an itching about the anus, accompanied by a swelling and burning sensation, are the premonitory symptoms of this disease. 2

The Śataponakah Type :—The Vāyu, excited, condensed, and rendered motionless by a course of unwholesome food, gives rise to a pustule within one or two fingers' length from the rectum (anal region, —Guda), by vitiating the flesh (areolar tissue) and blood (of the locality). It assumes a vermilion colour and is characterised by a variety of pricking, piercing pain. If neglected at the outset, the pustule runs into suppuration. Owing to its vicinity to the bladder, the abscess or the suppurated pustule exudes a kind of slimy secretion and becomes covered with hundreds of small sieve-like holes, through which a constant frothy discharge is secreted in large quantities. The ulcer, thus formed, seems as if it is being thrashed with a rod, pierced

with a sharp instrument, cut with a knife, and pricked by needles. The region of the anus cracks and bursts, and jets of urine, fecal matter, flatus (Vāta) and semen are emitted through these sieve-like holes. This type of fistula is called Śatapānakah (Sieve-like fistula in ano) 3

The Ushtra-grivah Type:—The enraged Pittam, carried down by the Vāyu (into the rectum) finds lodgment therein, and there gives rise to a small, raised, red pustule, which resembles the neck of a camel in shape, and is characterised by a varied kind of pain, such as sucking etc. The pustule, not medicinally treated at the beginning, runs into suppuration. The incidental ulcer seems as if it is being burnt with fire or alkali, and emits a hot, fetid discharge. Jets of urine, flatus (Vāta), fecal matter and semen flow out of the ulcer in the event of it not being healed up with proper medicinal remedies. This type is called Ushtragrīvah 4.

The Parisrāvi Type:—The enraged Kaphah, carried down by the Vāyu (into the rectum) and lodged therein, gives rise to a white, hard, itching pustule in that locality, characterised by a variety of itching pains, etc. If neglected at the outset, it soon runs into suppuration. The incidental ulcer becomes hard and swollen, marked by excessive itching and a constant secretion of slimy fluid. Jets of urine, fecal matter, flatus and semen are emitted through the ulcer in the event of it not being well cared for at the outset. This type is called Parisrāvi 5.

The Śamvukāvartah Type:—The enraged Vāyu, in conjunction with the aggravated Pittam and Kapham, is carried down, and finds lodgment (in the region of the rectum), giving rise to a pustule of the size of the first toe, and characterised by a piercing

pain, and burning, itching sensations etc. Such a pustule, neglected at the outset, speedily suppurates, and the incidental ulcer exudes secretions of diverse colours, characterised by a kind of whirling pain, which revolves about, in the direction of the involuted indentures (within the grooves of the rectum) such as are found within the body of a river or fresh water mollusc. This is called *Samvukāvartah* 6.

The Unmārgi Type :—Particles of bones, eaten with (cooked) meat by an imprudent, greedy, gluttonous person, may be carried down with the hard and constipated stool by the *Apāna Vāyu* (into the rectum), thus scratching or abrading the margin of the anus, or burrowing into the rectum in the event of their being evacuated in improper directions through (transverse or horizontal postures). The scratch or abrasion is soon transformed into a fetid and putrid ulcer, infested with worms and parasites, as a plot of miry ground will soon swarm with a spontaneous germination of similar parasites. These worms and parasites eat away the sides of, or largely burrow into, the region of the anus, and jets of urine, fecal matter, and flatus (*Vāyu*) are found to gush out of these holes. This type of *Bhagandaram* is called *Unmārgi* 7.

Authoritative verses on the subject :—A pustule, appearing about the region of the anus and characterised by a slight pain and swelling, and spontaneously subsiding, should be regarded as a simple pustule, which is of a quite different nature from a fistula in ano, which has contrary features (i.e., invariably found to be attended with a violent pain and swelling etc., and takes a long time to heal) A Fistula-pustule crops up within a space of two fingers' width of the *Pāyu* proper (distal end of the

rectum), is sunk at its root, and attended with pain and feeble symptoms. Pain, itching and burning sensations are experienced about the anus after a ride in a carriage, or after defecation. The anus becomes swollen, and the waist painful in the premonitory stages of Bhagandaram. 8—9.

Prognosis :—Almost all the types of this disease (Fistula in ano) yield to medicine after a prolonged course of treatment, and are hard to cure, except the Sannipātaḥ and traumatic ones, which are incurable 10

Thus ends the fourth Chapter of the Nidāna Sthānam in the Sushruta Samhitā, which treats of the Nidānam of Fistula in ano (Bhagandaram)

CHAPTER V.

Now we shall discourse on the **Nidānam** of **Kushtham** (cutaneous affections in general) 1

Improper diet or conduct; especially ingestion of improper, unwholesome, indigestible, or incongenial food; physical exercise or sexual intercourse immediately after partaking of any oleaginous substance, or after vomiting, constant use of milk in combination with the meat of any domestic, aquatic or amphibious animal; a cold water bath after an exposure to heat; and repression of any natural urging for vomiting etc. are the factors which tend to derange and aggravate the fundamental principle of **Váyu** in a person. The enraged or aggravated **Váyu**, in combination with the agitated **Pittam** and **Kapham**, enters into the vessels or ducts (**Sirá**), which transversely spread over the surface of the body. Thus the enraged **Váyu** deposits the **Pittam** and **Kapham** on the skin through the medium of their channels and spreads them over the entire surface of the body. The regions of the skin in which the aforesaid morbid diatheses are deposited become marked with circular rings or patches. The morbid diatheses (**Doshas**), thus lodged in the skin, continue to aggravate, and having been neglected at the outset, tend to enter into the deeper tissues and thus contaminate the fundamental principles (**Dhátus**) of the body 2

Premonitory Symptoms :—A roughness of the skin, sudden horripilation, an itching sensation in the surface of the body, excess or absence of perspiration, anæsthesia of the parts, a black colour of the blood, and a rapid growth and expansion of any ulcer (appearing on the body) are the symptoms which mark the premonitory stages of **Kushtham** 3.

Classification :—[Diseases, falling under the group of Kushtham, may be divided into two broad subdivisions], viz.,—*Mahákushthas* (major) and *Kshudra* (minor) *Kushthas*, the first consisting of seven, and the second of eleven different types, aggregating eighteen in all. The Mahákushthas are classified as, Aruna, Audumvara, Rishya-Jihva, Kapála, Kákanaka, Pundarika, and Dadru. The minor or Kshudra-kushthas (Lichen and Dermatitis) are Sthuláushkam, Mahákushtham, Eka-kushtham, Charmadalam, Visarpah, Parisarpah, Sidhma, Vicharchiká, Kitima, Pámá, and Rakasá. All the types of Kushtham, whether major or minor, involve the action of the deranged Váyu, Pittam or Kapham, and are connected with the presence of parasites in those localities.* The preponderance of any particular morbid diathesis (Dosha) in any case of Kushtham should be looked upon as its originating cause. The type, known as Aruna Kushtha, is due to the action of the preponderant Váyu, Audumvara, together with Rishya-Jihva, Kapála and Kákanaka, to a preponderance of the deranged Pittam, while Pundarika and Dadru owe their origin to an excess of the deranged Kapham. These types of major or minor Kushthas are successively more extensive in their action and more incurable on account of their respectively invading a greater number of the bodily elements (Dhátus) 4—6

Mahákushthas :—Aruna-kushtha owes its origin to an exuberance of the deranged Váyu. It is slightly vermilion-coloured, thin and spreading in its

* Certain authorities hold that, all types of Kushtham (cutaneous affections) to be of parasitic origin. The *Garuda Puranam* avers that, the parasites, which infest the external principles of the body, are the primary causes of cutaneous affections—*Kushtharika-helavantarjáh shlemsha, a vāhya sambhavadh*. Ch. CLXIX. 4.

nature. A sort of pricking, piercing pain (is experienced in the affected locality) which loses all sensibility to the touch. The type known as **Andumbara** is coloured and shaped like a ripe or mature *Andumbara* fruit and has its origin in the deranged Pittam. The type called **Rishyajihva** is rough and resembles the tongue of a Rishya (Deer) in shape and colour. The type known as **Kapāla** (*Macula cærulea*) resembles a black (deep blue) *Khapara* (baked clay). The **Kākanaka** type is characterised by a dark red and black colour like the seed of the *Gunya* berry. A sort of sucking and burning pain is experienced in the affected locality in all the four preceding types of the disease which are the outcome of the deranged Pittam. The whole diseased surface seems as if burning with fire, and emitting hot fumes. They are speedy in their origin and rapidly suppurate and break. All these types soon become infested with parasites. These are the general features of these forms of *Kushthas*. 7.

Pundarika:—The patches resemble the petals of a (full blown) lotus flower in colour, and **Dadru** (Ringworm) assumes the colour (faint blue) of an *Atasi* flower, or of copper. They are spreading in their nature and are found to be overspread with pustules. Both the **Dadru** and **Pundarika** types are raised, circular, and characterised by itching and take a considerable time to be fully patent. These are the general characteristics of **Dadru** and **Pundarika**. 8.

Kshudra Kushthas:—We shall now describe (the features of the diseases known as) **Kshudra-kushthas** (M. Text). —The type known as **Sthūlārushka** appears about the joints. It is extremely thick at its base, is cured with the greatest difficulty, and is strewn over with hard pustules (*Arungshi*). In the type known

as of **Mahākushtham** the skin contracts, and with the bursting of the skin (a piercing pain is felt in the affected part), which loses all sensibility to the touch, accompanied by a general sense of lassitude in the limbs. In the **Ekakushtham** (Ichthyosis) type the skin assumes a reddish black colour. It is incurable. In the form known as **Charmadalam** (Hypertrophy of the skin) a burning, sucking, drawing pain is experienced in the palms of the hands and in the soles of the feet which become characterised with an itching sensation. The disease, which affects in succession the (organic principles of) skin, blood and flesh, and speedily extends all over the body, like Erysipelas, and is attended with a burning sensation (**Vidāha**), restlessness, suppuration and a piercing pain and loss of consciousness (epileptic fits), is called **Visarpa Kushtham**. The form in which a number of exuding pustules gradually extend over the surface of the body is called **Parisarpa Kushtham**. The type of the disease which is white and thin, and is characterised by itching and does not create any disturbance (in the patient), is called **Sidhma** (*Maculæ atrophicæ*). This form is generally found to restrict itself to the upper part of the body. **Vicharchikā** (*Psoriasis*) is characterised by excessive pain and itching and gives rise to extremely dry crack-like marks on the body [hands and feet]. The same form of malady attended with pain, burning and itching, and restricting itself solely to the lower extremities, is called **Vipādikā**. The type in which the eruptions exude (a kind of slimy secretion) and which are circular, thick, excessively itching, glossy and black-coloured is called **Kitima** (*Keloid tumours*). Small pustules or pimples characterised by an itching, burning secretion and appearing on the surface of the body are called **Pāma** (*Eczema*). The preceding kinds of pimples attended

with burning vesicles, are called **Kachohus** and are found to be chiefly confined to the legs, hands and buttocks. A sort of dry and non-exuding pimples characterised by excessive itching and appearing all over the body, is called **Rakasá** (dry Erythema). 9-10.

The forms known as **Sthulárushka**, **Sidhma**, **Rakasá**, **Mahákushtham** and **Ekakushtham** should be considered as offspring of the deranged **Kapham**. **Parisarpa-kushtham** alone is due to the action of the deranged **Váyu**, while the remaining types (of minor **Kushtham**) owe their origin to the action of the deranged **Pittam**. 11.

Kilásam :—The disease known as **Kilásam** is but another form of **Kushtham**. It may be divided into three types according as it is brought about through the action of the deranged **Váyu**, **Pittam** or **Kapham**. The difference between **Kilásam** and **Kushtham** is that the former confines itself only to the **Tvaka** (the skin) and is marked by the absence of any secretion.* A case of **Kilásam** caused by the action of the deranged **Váyu** is circular, vermilion-coloured and rough to the touch. The affected part when rubbed peels off scales of morbid skin. A case of **Kilásam**, due to the action of the deranged **Pittam**, is marked by eruptions, resembling the petals of a lotus flower (in shape and colour), and are attended with an extremely burning sensation. In the type originated through the action of the deranged **Kapham**, the affected part (skin) assumes a glossy, white colour, becomes thick and is marked by an itching sensation. The form in which the eruptions or patches extend and become confluent, invading even the soles of the feet,

* A case of **Kushtham** has its primary seat in the blood and skin (of the patient), in which it lies confined during the period of incubation, after which it attacks the skin and secretes the characteristic secretion of the deranged **Dosha** involved in it.

the palms of the hands and the region of the anus, and in which the local hairs assume a red colour should be regarded as incurable. A case of Kílāsham, which is the outcome of a burn (cicatix) should be likewise considered as incurable. 12.

A preponderance of the deranged Váyu in a case of Kushtham (leprosy) is indicated by a contraction of the skin, local anæsthesia, a copious flow of perspiration, swelling, and piercing or cutting pain in the affected part, together with a deformity of the limbs and hoarseness. Similarly, an excess of the deranged Pittam in a case of Kushtham, should be presumed from the suppuration of the affected part, from the breaking of the local skin, from the falling off of the fingers, from the sinking of the nose and ears, from the redness of the eyes and from the germination of parasites in the incidental ulcer. An excessive action of the deranged Kapham, in a case of Kushtham, gives rise to itching, discolouring and swelling of the affected part which becomes heavy and exudes the characteristic secretion. The types, Pundarika and Kákanam, which are due to the germinal defect of the patient, are incurable, inasmuch as they involve (according to Dallana) the concerted action of the three simultaneously deranged Doshas from the very outset. 13

Memorial verses — As a tree, full grown in the course of time, has driven its roots, which derive their nourishment from the rain water, deeper and deeper into the successive strata of the soil, so this disease (Kushtham), first affecting and confining itself to the upper layers of the skin, will invade the deeper tissues and organs etc. of the patient, if unchecked until almost all the fundamental principles or elements Dhátus are attacked by its virus in the course of time. 14

The symptoms of a case of Kushtham confined only to the serous (Tvaka) fluid of the skin are the loss of the perception of touch, a scanty perspiration, itching and discoloration and roughness of the affected part. The symptoms which manifest themselves when the disease is confined to the blood are complete anæsthesia, horripilation, absence of perspiration, itching and excessive accumulation of pus in the affected parts. The symptoms of Kushtham affecting only the flesh are thickness of the patches, dryness of the mouth, roughness and hardness of the patches which become covered with pustular eruptions and vesicles, and an excruciating pricking pain in, and numbness of, the affected part. The symptoms of (Kushtham) invading the principle of fat only are a fetid smell and an excessive accumulation of pus in the affected part and a breaking of the skin, exposing deep gashing wounds which soon become infested with parasites. The body seems as if covered with a plaster. Symptoms of (Kushtham) affecting only the bones and the marrow are a sinking (lit breaking) of the nose, a redness of the eyes, loss of voice and the germination of parasites in the incidental ulcers. Symptoms of the disease restricting itself only to the principle of semen are a crippled state of the hands and distortion of the limbs, loss of the power of locomotion, spreading of ulcers and all the other symptoms peculiar to the preceding types of the disease. 15—20.

A child, which is the offspring of the contaminated semen and ovum of its parents afflicted with Kushtham, should be likewise regarded as a Kushthi 21.

Prognosis:—A case of Kushtham appearing in a person of prudence and discretion and confined only to the serum (Tvaka), flesh and blood of his organism should be regarded as curable. A palliative treat-

ment is the only remedy in cases where the disease is found to invade the principle of fat, whereas a case where the poison is found to have penetrated into any of the remaining organic principles should be given up as incurable 22

Wise men hold that, for killing a Bráhmāna, or a woman, or one of his own relations, for theft, as well as for doing acts of impiety, a man is sometimes cursed with this foul disease by way of divine retribution. The disease reattacks a man even in his next rebirth in the event of his dying with it. Uncured Kushtham (leprosy) is the most painful, and most troublesome of all diseases 23—24

A Kushthi (leper), getting rid of this foul malady by observing the proper regimen of diet and conduct and by practising expiatory penances and by resorting to proper medicinal measures, gets an elevated status after death 25.

Kushtham (Leprosy) is a highly contagious disease; the contagion being usually communicated through sexual intercourse with a leper (Kushthi), or by his touch or breath, or through partaking of the same bed, and eating and drinking out of the same vessel with him, or through using the wearing apparel, unguents and garlands of flowers previously used by a person afflicted with this dreadful disease. Kushtham (Leprosy), fever, pulmonary consumption, ophthalmia and other Aupasargika disease (incidental to the influences of malignant planets or due to the effects of impious deeds) are communicated from one person to another. 26

Thus ends the fifth Chapter of the Nidānasāhita in the Sushruta Samhita which treats of the Nidānam of cutaneous affections (Kushtham)

CHAPTER VI.

Now we shall discourse on the Nidāram of **Pra-meha** (diseases of the urinary tracts). 1.

It may be prognosticated that an idle man, who indulges in day sleep, or follows sedentary pursuits or is in the habit of taking sweet liquids, or cold and fat-making or emollient food, will ere long fall an easy victim to this disease. 2

Pathology :—The bodily principles of Vāyu, Pittam and Kaphah of such a person get mixed with improperly formed chyle of the organism. Thus deranged, they carry down through the urinary ducts the deranged fat, etc.* of the body and find lodgment at the mouth (neck) of the bladder, whence they are emitted through the methra†, causing diseases, known by the (generic) name of Prameha 3

Premonitory symptoms :—A burning sensation in the palms of the hands and of the soles of the feet, a heaviness of the body, coldness or sliminess of the skin and limbs, sweetness and whiteness of the urine, somnolence, lassitude, thirst, a bad-smelling breath, a shortness of breath, slimy mucous deposit on the tongue, palate, pharynx and teeth, clotted hair and an inordinate growth of the finger and toe nails are the indications which mark the advent of the disease. 4

General Characteristics :—A copious flow of cloudy or turbid urine characterises all the types of the disease, which, together with the abscesses and eruptions (Pidaká) which mark its sequel, should be

* The particle "cha" in the text denotes other virus or morbid matter. Dallana.

† Remain incarcerated therein according to others.

regarded as involving the concerted action of the deranged Doshas (Váyu, Pittam and Kaphah). 5.

The Kaphaja Types:—Cases of Pramcha, which are caused by an exuberance of the deranged Kapham, may be grouped under ten subheads such as, *Udaka-meha*, *Ikshu-meha*, *Surà-meha*, *Sikata-meha*, *S'anai-meha*, *Lavana-meha*, *Pishta-meha*, *Sandra-meha*, *S'ukra-meha* and *Phena-meha*. The ten aforesaid types are curable, inasmuch as the medicines which tend to remedy the deranged Kapham (Dosha), the cause of the disease, prove also remedial to the other principles of the body (flesh, marrow, blood, semen etc) deranged (Dushya) from the same causes 6.

The Pittaja Types:—The types, which are brought about through an exuberance of the deranged Pittam, are named as *Nila-meha*, *Haridrà-meha*, *Amla-meha*, *Kshard'-meha*, *Manjishthà-meha*, and *S'onita-meha*. Palliation is all that can be effected in these types, inasmuch as the medicines which tend to correct the deranged Pittam, which has brought on the disease, fail to exert similar virtues on the organic principles (Dushyas) deranged by it 7.

The Vataja Types:—The types of Prameha which are produced by an aggravated condition of the bodily Váyu are divided into four subgroups, such as *Sarpi-meha*, *Vasà-meha*, *Kshoudra-meha* and *Hasti-meha*. These should be regarded as most incurable inasmuch as no kind of medicine can restore the fleet-coursing, deep diving (*i.e.* invading the bones and the marrow) Váyu, which at the same time also augments the Pittam, to its normal state and thus advances (unchecked) in its work of disintegration 8.

The deranged Kaphah, in conjunction with the (morbid) Pittam, Váyu and fat, gives rise to all Kaphaja

types of Prameha The deranged Pittam, in conjunction with the deranged Váyu, blood, fat and Kapham, produces the Pittaja ones, while the deranged Váyu, in unison with the deranged Kapham, Pittam, fat, marrow and Vasá (myosin), engenders the types of Vátaja Prameha. 9

Symptoms of Kaphaja-Mehas :—The urine* of a person suffering from an attack of Udakameha becomes white and water-like and is passed without the least pain. In a case of Ikshumeha the urine resembles the expressed juice of sugarcane. It has the colour of wine in a case of Surámeha. The urine in a case of Sikatámeha is passed with pain and is found to leave a sediment of extremely fine and sand-like concretions (*Sikata's*) In a case of Sanaimeha the urine gushes out at intervals in jets and is charged with a slimy mucous (kaphah) The urine in a case of Lavanameha becomes limpid (non-viscid) and acquires a saline taste There is horripilation at the time of micturition in a case of Pishtameha (Chyluria), the urine resembling a stream of water, charged with a solution of pasted rice (Pishtam)

In a case of Sándrameha, the urine becomes thick and turbid, while in a case of Śukrameha the urine resembles semen (or the urine is found to be charged with semen.—Mádhava) In a case of

* The Sanskrit term Meha literally means to micturate The verbal noun Mehanam signifies urination as well as the act of passing any morbid urethral secretion Hence the urine in most of these cases denotes the fact of its being charged with pus or any other morbid secretion of the urinary organs such as Ojā (albumen) marrow, etc., which imparts their characteristic colours to the fluid,—a fact which determines the nomenclature of the disease and forms the keynote of its diagnosis in the *Āyurveda*.—Ed.

Phenameha the patient passes frothy urine in broken jets. 10.

Symptoms of Pittaja Mehas:—Now we shall describe the characteristic features of the types of Prameha, which are due to the action of the deranged Pittam. The urine in a case of **Nilameha** becomes frothy, transparent and bluish. The urine in a case of **Haridrāmeha** becomes deep yellow like turmeric (*Haridrā*) and is passed with a burning pain. The urine in a case of **Amīameha** acquires an acid taste and smell. The urine in a case of **Kshārameha*** resembles an alkaline solution filtered (through a piece of linen). The urine in a case of **Manjisthāmeha** resembles the washing of the *Manjisthā*, while in a case of **Raktameha**, the urine is found to be of blood-colour (or charged with blood—*Mādhava*). 11.

Symptoms of Vātajā-Mehas:—Now we shall describe the characteristics of the different types of Prameha, which are due to an exuberance of the deranged Vāyu. In a case of **Saīpimeha**, the urine looks like a stream of clarified butter, while in one of **Vasāmeha** it resembles the washings of *Vasā*. In a case of **Kshaudrameha**, the urine looks like honey and acquires a sweet taste. In one of **Hastimeha**, the patient passes a copious quantity of urine, like an excited elephant, at a time, and in one unbroken stream, (the organ becoming steady immediately after the act of micturition) 12.

Supervening symptoms:—The fact of the urine being assailed by a swarm of flies, lassitude, growth of flesh (obesity), catarrh, looseness of the limbs, a

* The urine acquires a distinct alkaline taste, smell, colour and touch. (*Mādhava Nidānam*).

† Charaka has included it within *Kshaudra Meha* and *Mādhū Meha*.

non-relish for food, indigestion, expectoration of mucous, vomiting, excessive sleep, cough and laboured breathing (Śvāsa) are the supervening traits (Upadrava) of the **Kaphaja Prameha**. A piercing pain in the testes, a pricking (veda) pain in the bladder, a shooting pain (Tuda) in the penis, a gripping pain at the heart, acid eructations, fever, dysentery, a non-relish for food, vomiting, a sensation as if the entire body is emitting fumes, a burning sensation in the skin, thirst, epileptic fits, insomnia, jaundice (Pāndu) and a yellow colour of the stool and urine are the supervening symptoms which mark the **Pittaja types** of Prameha. An oppressive feeling at the heart (Hridgraha), eager longings for foods of all tastes, insomnia, numbness of the body, fits of shivering, colic pain and constipation of the bowels are the supervening symptoms, which specifically mark the **Vātaja types**. Thus we have described the nature of the twenty different types of Meha with their supervening evils as well. 13-16.

The ten different types of Pidakā (abscess, carbuncles, pimples, pustules etc.) are found to crop up on the bodies of patients, suffering from Prameha, and abounding in fat and Vasā, and whose fundamental principles have been affected by the simultaneous derangement of the Vāyu, Pittam and Kapham. They are named as **Sarāvikā**, **Sarshapikā**, **Kachchapikā**, **Jālīni**, **Vinatā**, **Putrīni**, **Masurikā**, **Alajī**, **Vidārikā** and **Vidādhikā** 17

Metrical Texts:—An abscess which is raised at the margin and dipped in its centre, so as to resemble an Indian saucer in its shape is called **Sarāvikā**. Pimples or pustules of the shape and size of white mustard seeds are called **Sarshāpikā**. An abscess, resembling (the back of) a tortoise in shape and attended with a burning sensation, is called **Kachchapikā** by the wise.

An abscess studded with slender vegetations of flesh and attended with an intolerable burning sensation is called **Jālini**. A large blue-coloured abscess (carbuncle) appearing on the back or the abdomen, and exuding a slimy secretion and attended with a deep-seated pain is called **Vinatā**. A thin and extensive abscess (studded with slender pustules—D R.) is called **Putrini**. Pimples to the size of lentil seeds are called **Masurikā**. A dreadful abscess which is of a red and white colour, studded over with blisters or exuding vesicles is called **Alaji**. A hard and round abscess as large as a (full-grown) gourd is called **Vidārikā**. An abscess of the **Vidradhi** type is called **Vidradhikā** (carbuncle) by the wise. An incidental abscess in a case of **Prameha** should be regarded as having its origin in the same morbid principle (**Dosha**) as that which has produced the disease (**Prameha**) 18-28.

Prognosis :—A **Pidakā**, or an abscess, appearing about the region of the heart, anus, head, shoulder, back or at any of the vital joints (**Marma**) of the body, and attended with other supervening symptoms producing extreme prostration [impaired digestion—D R.] in the patient should be abandoned as incurable. In a case of **Vātaja meha**, the deranged **Vāyu** presses all the fundamental principles out of the body through the urethra and rages rampant in the lower part of the body, united with the deranged fat, marrow and **Vasā**. Hence a case of **Vātaja meha**, (or its accompanying abscess), is held as incurable 29-30

A person in whom the premonitory symptoms (**Purvarupam** of **Prameha**) have appeared and who passes a little larger quantity of urine than usual, should be considered as already afflicted with it. A person afflicted with all or half of the premonitory symptoms of the disease and passing a copious quantity of urine

should be considered as one suffering from an attack of Prameha. 31—32.

A Prameha patient afflicted with deep-seated abscesses and other distressing symptoms, which are usually found to supervene in the disease, should be pronounced as suffering from Madhumeha and adjudged incurable. A Madhumeha patient seeks a halting place while walking, wants a place to sit on while halting, lies down if he finds a sitting place, and sleeps if he lies down. 33—34.

As five mixed colours such as grey, brown, Kapila (bluish yellow), Kapota (blackish grey), Mechaka (light-green) may be produced by combination of the five primary colours in definite proportions (such as white, green, black, yellow and red), so a diversity of causes, through the relative preponderance of the particular kinds of food, and of the deranged Doshas, root principles (Dhātu) and excretions of the body (Mala), may be attributed to the origin of Prameha. 35.

Memorial verses :—All types of Prameha, not properly treated and attended to at the outset, may ultimately develop into those of Madhumeha types, which are incurable 36

For English equivalents of the different types of Prameha compare :—

Cystitis (Acute Infective)—Frequent, painful micturition, small quantity of urine voided with pain and urgency. Urine—slightly acid or alkaline in reaction, cloudy, containing blood corpuscles. Cystitis (Chronic Infective)—Great and frequent pain, in the lumbar region, rigor. Urine—thick, offensive and alkaline, containing ropy mucous and blood. Cystitis (Non-Infective)—Symptoms like those of acute inflammatory type. Urine—acid and cloudy with mucous. Blood is generally present in considerable quantity. Neuralgia of the bladder, compare Albuminuria, Albumosuria, Hæmoglobinuria, Hæmaturia, Peptonuria, Pyuria, Spermatorrhœa and Diabetes, Proteuria and Polyuria.

Thus ends the sixth Chapter of the Nidāna Sthānam in the Sushruta Samhitā, which treats of the Nidānam of Prameha.

CHAPTER VII.

Now we shall discourse on the Nidānam of Udara (diopsy with an abnormal condition of the abdomen). 1.

Metrical Text :—The royal sage Dhanvantari, the foremost of all pious men who equalled in splendour and glory the lord of the celestials, thus blissfully discoursed on the Nidānam of Udara to Suśruta, the son of the holy Viśvāmītra, who devoutly approached him for that purpose. 2.

Classification :—This disease may be divided into eight different types, of which four are produced by the several actions of the three deranged Doshas of the body and their concerted action as well. Of the remaining types, two being known as Plihodara (including Yakītodara), and Vaddha-Gudodara (tympanites due to the constriction of the anus), the seventh Āgantuka (traumatic or of extraneous origin), and the eighth Dakodara (Ascites proper). 3

Predisposing Causes :—The deranged Doshas of a person of extremely impaired digestion, addicted to the habit of taking unwholesome food, or of eating dry, putrid food, or of violating the rules of conduct to be observed in connection with oleaginous measures etc.,* are aggravated and find lodgment in the abdomen. Thus appearing in the shape of an abdominal tumour (Gulma), they give rise to this dreadful disease, attended with all its characteristic symptoms. The lymph chyle formed out of the assimilated food gets vitiated, and, impelled by the aggravated Vāyu, it percolates

* These include purgative, emetic, A'stha'panam and Anuva'sanam measures,

through the peritoneum in the same manner as a quantity of oil or clarified butter kept in a new earthen pot will transude through the pores of its sides. It thus gradually distends the skin (Tvak) of the abdomen. The process becomes general all through the abdominal region and the disease (Udara) is produced in consequence 4—5.

Premonitory symptoms:—The precursory symptoms of the disease are loss of strength, complexion and appetite, emaciation of the muscles of the abdomen, appearance of veins on its surface, acid reaction of food closely following upon its digestion (Vidāha), pain in the bladder, and swelling of the lower extremities. The patient cannot ascertain whether his meal has been digested or not. 6

The Vātaja, Pittaja, and Kaphaja Types:—A case of Udara in which the abdomen enlarges on its sides and posterior part, and is overspread with nets of black veins should be ascribed to the action of the deranged Vāyu. A pain (Śula), suppression of the stool and urine (Anāha) and a cutting and piercing pain and flatulent rumbling in the intestines are the symptoms which likewise characterise this Vātaja form of Udara. A sucking pain in the abdomen, thirst, fever with a burning sensation, yellow colour of the swollen skin of the abdomen, on the surface of which yellow veins appear, yellow colour of the eyes, nails, face, stool and urine and the rapid increase of the dropsical swelling, are the characteristics of the Pittaja Udara. In a case of Kaphaja type the dropsical swelling is cold to the touch and becomes overspread with white-coloured veins. The abdomen seems heavy, hard, glossy and is extremely distended. The swelling slowly increases, and the fingernails and face of the patient become white, and he complains of a general lassitude 7—9

The Tridoshaja Type :—Evil-natured women (with a view to win the affections of their husbands or lovers sometimes) mix with their food and drink such refuse matters of their bodies as nails, hair, fæces, urine, catamenial blood etc. (which are supposed to be possessed of talismanic virtues) The three Doshas of the body, vitiated by such food or drink, or through imbibing any sort of chemical poison (Gara) administered by one's enemy, or by taking poisonous waters, or Dushi-Visha (slow poison whose active properties have been destroyed by fire or any antipoisonous medicine), will vitiate the blood and give rise to a kind of dreadful dropsical swelling of the abdomen, marked by the specific symptoms of each of them. The disease is aggravated in cold and cloudy days and a burning sensation is felt (in the inside of the abdomen). The patient becomes pale, yellow and emaciated, and is afflicted with thirst and dryness in the mouth, and loses consciousness at short intervals. This disease is also known as the dreadful **Dushyodaram**. 10.

Plihodaram.—(Spleen with dropsy of the abdomen) —Now hear me describe the symptoms of Plihodaram. The blood and the Kapham of a person, deranged and aggravated through the ingestion of phlegmagogic food, or of those which is followed by an acid digestionary reaction (Vidāha), often enlarge the spleen, (which gives rise to a swelling of the abdomen). This disease is called **Plihodara** by the experts. Plihodaram protrudes on the left side of the abdomen, its characteristic symptoms being lassitude, low fever, impaired digestion, loss of strength, jaundice, weakness, and other distressing symptoms peculiar to the deranged Pittam and Kapham. A similar enlargement of the liver through similar causes on the right side of the abdomen is called **Jakriddālyudaram**. 11—12.

Vaddha-gudodaram* :—The fecal matter, mixed with the deranged Vāyu, Pittam etc. of the body, lies stuffed in the rectum of a person whose intestines have been stuffed with slimy food (as pot herbs) or with stones and hair (enteritis). They give rise to a sort of abdominal dropsy by swelling the part between the heart and the umbilicus which is called Vaddha Gudodaram. Scanty stools are evacuated with the greatest pain and difficulty and the patient vomits a peculiar kind of matter with a distinctly fecal smell (scybalous?). 13.

Parisrávi-Udaram :—Now hear me describe the causes and symptoms of the type of Udaram which is called Parisrávi-udaram. Thorny or sharp-pointed substances (such as fish-bones etc.), carried down with the food in a slanting way from the stomach into the abdomen, sometimes scratch or burrow into the intestines. Causes other than the preceding ones, (such as a long yawn or over-eating etc.) may contribute to the perforation of the intestines, giving rise to a copious flow of a watery exudation which constantly oozes out of the anus and to a distension of the lower part of the abdomen situated below the umbilicus. This is called Parisrávyudaram which is marked by a cutting pain and a burning sensation. 14.

Dakodaram :—Now hear me describe the causes and symptoms of the type known as Dakodaram (ascites). The drinking of cold water immediately after the application of an Aunvásanam or Ásthápanam enema, or closely following upon the exhibition of any purgative or emetic medicine, or just after the taking of a medicated oil or clarified butter, etc. tends to derange

* Dropsical swelling of the abdomen with tympanites due to the constriction of the rectum known as intestinal obstruction,

the water-carrying channels of the body. The same result may be produced by the drinking of oil, etc. in inordinate quantities. The water, by percolating or transuding through the walls of these channels, as before described, inordinately enlarges the abdomen, which becomes glossy on the surface and is full of water, being rounded about the umbilicus and raised like a full-bloated water-drum. The simile is complete as it fluctuates under pressure, oscillates, and makes a peculiar sound like a water-drum under percussion 15

Distension of the stomach, incapacity of locomotion, weakness, impaired digestion, oedematous swelling of the limbs, a general sense of lassitude and looseness in the limbs, suppression of flatus and stool, and a burning sensation and thirst are among the general characteristics of the disease in its various forms. 16.

Prognosis :—All cases of Udaram after the lapse of considerable time develop into those of ascites, and a case arriving at such a stage should be given up as incurable 16—17.

Thus ends the seventh Chapter of the Nīdāna Sthānam in the Sushruta Samhitā which treats of the Nīdānam of Udaram.

CHAPTER VIII.

Now we shall discourse on the ~~Nidānam~~^{LADN} of **Mudhagarbham** (false presentations and difficult labour) 1

Causes of Mudha-garbham .—Sexual intercourse during pregnancy, riding on horseback, etc., or in any sort of conveyance, a long walk, a false step, a fall, pressure on the womb, running, a blow, sitting or lying down on an uneven ground, or in an uneven posture, fasting, voluntary repression of any natural urging of the body, partaking of extremely bitter, pungent, parchifying articles, eating in inordinate quantities of Śākas and alkaline substances, dysentery (Atisāra), use of emetics or purgatives, swinging in a swing or hammock, indigestion, and use of medicines which induce the labour pain or bring about abortions, and such like causes tend to expel the fœtus from its fixture. These causes tend to sever the child from the uterine wall with its placental attachment owing to a kind of Abhighātam (uterine contraction) just as a blow tends to sever a fruit from its pedicel. 2

Definition .—The fœtus, thus severed and dislodged from its seat, excites peristalsis not only in the uterus, but induces a sort of constant, spasmodic contraction of the intestinal cavities (Koshthas), producing pain in the liver, spleen, etc. The Apāna Vāyu, thus obstructed through the spasmodic contraction of her abdomen, produces any of the following symptoms, viz a sort of spasmodic pain in the sides, or in the neck of the bladder, or in the pelvic cavity, or in the abdomen, or in the vagina, or Ānāha (tympānites with obstruction, etc.) or retention of urine,

and destroys the fœtus, if immature, attended with bleeding. In case the fœtus continues to develop and is brought in an inverted posture at the entrance to the vaginal canal, and is impacted at that place, or if the Apána Váyu gets disordered and consequently cannot help the expulsion of the same, such an obstructed fœtus is called **Mudha garbhah**. 3.

Classification and Symptoms:—Cases of Mudha-garbha may be roughly divided into four different classes such as, the *Kilah*, the *Pratikhurah*, the *Vijakah* and the *Parighah*. The sort of false presentation in which the child comes with its hands, legs and head turned upward and with its back firmly obstructed at the entrance to the vagina, like a stake or a kila, is called **Kilah**. The sort of presentation, in which the hands, feet and head of the child come out, with its body impacted at the entrance to the vagina, is called **Pratikhurah**. The type in which only a single hand and the head of the child come out (with the rest of its body obstructed at the same place), is called the **Vijakah**. The type in which the child remains obstructing the head of the passage in a horizontal position, like a bolt, is called the **Parighah**. Certain authorities aver that, these are the only four kinds of Mudhagarbha. But we can not subscribe to the opinion (which recognises only four kinds of false presentations), inasmuch as the deranged Váyu (Apána) can present the fœtus in various different postures at the head of the vaginal canal. Sometimes, the two thighs of the child are first presented, and sometimes it comes with a single leg flexed up. Sometimes the child comes with its body, bent double, and thighs drawn up, so that only breech is obliquely presented. Sometimes the child is presented, impacted at the head

of the passage with its chest, or sides, or back. Sometimes the child is presented with its arm around its head, resting on the side, and the hand coming out first. Sometimes only the two hands are first presented, the head leaning on one side, sometimes the two hands, legs and the head of the child, the rest of the body being impacted at the exit in a doubled up posture. Sometimes one leg is presented, the other thigh being impacted at the passage (Páyu). I have briefly described these eight sorts of presentation of which the last two are irremediable. The rest should be given up as hopeless if these are attended with the following complications *viz.*, deranged sense-perception of the mother, convulsions, displacement or contraction of the reproductive organ (yoní) a peculiar pain like the after-pain of child birth, cough, difficult respiration, or vertigo. 4.

Memorial verses :—As a fruit, fully matured, is naturally severed from its pedicel and falls to the ground and not otherwise, so the cord, which binds the foetus to its maternal part, is severed in course of time, and the child comes out of the uterus (into this world of action). On the other hand, as a fruit, worm-eaten or shaken by the wind or a blow, untimely falls to the ground, so will a foetus be expelled out of its mother's womb, before its time. For four months after the date of fecundation, the foetus remains in a liquid state, and hence its destruction or coming out of the womb goes by the name of abortion. In the course of the fifth and sixth months the limbs of the foetus gain in firmness and density, and hence, its coming out at such a time is called miscarriage 5-7.

Prognosis :—The encephite who violently tosses her head in agony (at the time of parturition) and the surface of whose body becomes cold, compelling

her to forego all natural modesty, and whose sides and abdomen are covered with nets of large blue-coloured veins, invariably dies with the dead child locked in her womb. The death of the foetus in the womb may be ascertained by the absence of movements of the foetus (in the womb) or of any pain of child-birth, by a brown or yellow complexion of the *puccinta*, cadaverous smell in her breath, and colic pain in the abdomen and its distension owing to the continuance of the swollen and decomposed child in the womb. 8-9

The death of a child in the womb may result from some emotional disturbance of its mother, (such as caused by bereavement or by loss of fortune during pregnancy), while an external blow or injury (to the womb) or any serious disease of the mother may also produce the like result. A child, moving in the womb of a dead mother, who had just expired (from convulsions etc) during parturition at term, like a goat (*Vastāmāra*) should be removed immediately by the Surgeon from the womb (by Cæsarean Section),* as a delay in extracting the child may lead to its death. 10-11.

* Cæsarean Section means incision of the uterus through the abdominal walls and extrication of the foetus therefrom. Operation like this upon a dead subject requires no skill of a surgeon. Any one can do it without the help of any anatomical knowledge. In modern times, when the mother's life is in peril, and the expulsion of the foetus becomes nearly impossible, by the natural passage, owing to an existence of deformity either in the parturient canal or in the forms and structures of the foetus, to save both mother and child this operation is principally undertaken.

The evidence of similar attempts, in ancient India, is found recorded in passages like what we have just translated and that the operation was practised on living subjects, there is not the least doubt about it. This custom is still preserved in Central Africa, and it is possible that the Egyptians like Hindu philosophy and religion learnt this also from the Hindus. "Fellin," says "Baas in his History of Medicine p. 70 "saw a case of the Cæsarean operation in Central Africa performed by a man. At one stroke

Additional Text:—The bladder is ruptured, the dead child lies like a weight upon the placenta and is pressed upward on the spleen, liver and gall bladder. The mother shivers and is oppressed with tremor, dryness of the tongue, dyspnoea and perspiration. She complains of a cadaverous smell in her breath and stands in danger of imminent death. By these symptoms a physician shall know the death of the child in the womb. This portion is partly recognised by Brahmadeva and is totally rejected by Jejjadáchárya as spurious.

an incision was made through both the abdominal walls and the uterus. The opening in the latter organ was then enlarged, the hæmorrhage checked by the actual cautery, and the child removed. While an assistant compressed the abdomen, the operator then removed the placenta. The bleeding from the abdominal walls was then checked. No sutures were placed on the walls of the uterus but the abdominal parietes were fastened together by seven figure-of-eight sutures, formed with polished iron needles and threads of bark. The wound was then dressed with a paste prepared from various roots, the woman placed quietly upon her abdomen, in order to favour perfect drainage, and the task of the African Spencer Wells was finished. It appears that the patient was first rendered half unconscious with banana wine. One hour after the operation the patient was doing well. And her temperature never rose above 101 F, nor her pulse above 108. On the eleventh day the wound was completely healed, and the woman apparently as well as usual."

When we read this evidence of Felkin, we are reminded of the operative steps as described in our own ancient book of Surgery from which modern surgeons have been able to borrow the operation of rhinoplasty. It is a great pity that while in Africa the same practice is still retained intact, we in India by spurious attempts and disgraceful contortions, substitutions of false readings and dismal knowledge of grammar and rhetoric try to prove in the face of strong evidence that in ancient India Cæsarean Section was attempted only on cases where one "might not perspire."

If we take विप्रसृताः in the sense of "a woman whose life is in great danger" and not exactly in the sense of "a woman who is dead" as recommended by Dallan and Arundutta (and which might have been the meaning if instead of विप्रसृता a word like व्यासृता had been used in the text), we find at once that Weher's remark in his History of Indian Literature p. 270 "that in Surgery they (the Hindus) attained to high proficiency" is not based on the solitary evidence of rhinoplasty alone.

In performing obstetric operations with success examples like this are not rare. If the two different readings वक्षस्यार and वक्षिहार be taken conjointly into consideration we are impressed with the idea that in ancient

India Cæsarean operations were very frequently undertaken in cases of puerperal eclampsia, where the mother had been in the deplorable condition of a goat suffering from cramps and convulsions as well as in cases of an accidental death not unlike that which fell to the lot of the poor mother of him in whose name the operation is called. वस्त=goat नार=destroyer (See Monier William's Dictionary) hence a goat-destroyer=a tiger or wolf) or in cases where the presence of deformity in the parturient canal or of malformation of the fœtus prevented the natural delivery of a living child. The incision is not to be made anywhere else but exactly in the place where Felkin saw the illiterate Negro successfully apply his knife, the selection of वस्ति* हारश्च as suggested by some commentators being a tempest on a tea pot especially when the subject is beyond the grave. In a living subject the selection of a proper site for the operation is of course very commendable. Hence we venture to suggest that extraction of the living fœtus from the womb by making incision through this part of the pelvis was also attempted later on. We extract here the two different readings and leave our readers to judge whether we are correct to draw the above inferences —Ed

वस्तिहारे विपन्नायाः कुचिः प्रसूयन्ते यदि जन्मकाले सत शोष पाटयिलोद्धरे-
च्छिशुम् । Bāgabhata S'ārira Sthānam ch. II slo 53

वस्तमार विपन्नाया कुचिः प्रसूयन्ते यदि तत्क्षणाज्जन्मकाले स पाटयिलोद्धरे-
च्छिशुक ।

Thus ends the eighth Chapter of the Nidāna Sthānam in the Sushruta Samhitā, which treats of Nidānam of difficult labour and false presentations.

CHAPTER IX.

Now we shall discourse on the Nidánam of **Vidradhi** (abscess etc) 1.

The blessed Dhanvantari, the honoured of the gods, who for the promulgation of the knowledge of the Áyurveda and for administering proper medicines (to the sick), took his birth at Kási, (Benares) as a king, thus fully discoursed on the symptoms of Vidradhi (abscess etc) to his disciple, Sus'ruta 2

Definition and classification :—The extremely deranged and aggravated Váyu, Pittam and Kapham, resorting to the bone and vitriating the Tvaka (skin), blood, flesh, and fat of a person (with their own specific properties), gradually give rise to a deep-seated, painful, round or extended swelling which is called **Vidradhi** by the wise. The disease admits of being divided into six types such as the *Vátaja* type, the *Pittaja* type, the *Kaphaja* type, the *Sānnipātika* type, the *Kshataja* type (traumatic), and the *Asīya* (which has its seat in the vitiated blood). Now we shall describe their specific symptoms. 3-4.

The Vátaja Type :—This abscess assumes a black or vermilion colour, is felt rough to the touch and is characterised by a sort of excruciating pain. The growth and suppuration of the abscess are brought about in a variety of forms (owing to the variable and irregular action of the deranged Váyu involved in these cases). 5.

The Pittaja Type :—This abscess assumes a blackish yellow colour or one like that of a ripe Audumvara fruit. It is attended with fever and a burning sensation, and is of rapid growth and suppuration. 6.

The Kaphaja Type:—This abscess is shaped like an Indian saucer (śaīāva) and seems cold to the touch. It assumes a light yellow colour and is characterised by numbness, itching and little pain. The growth and suppuration of this abscess is very slow. The secretions from a Vātaja abscess are thin, those from a Pittaja type are yellow, while the exudations from a Kaphaja abscess are white. 7

The Sānnipātika Type:—An abscess of the Sānnipātika type is of varied colour, and is attended with a varied sort of pain (sucking, drawing, turning etc.) and exudes secretions of various colours (white, yellow, etc.) It is little raised or elevated at its top, large and irregular in its shape and does not uniformly suppurate in all its parts. 8.

Āgantuja or Kshataja Type:—The local or inherent heat of an ulcer, (caused by a blow or a dirt) in a person, addicted to unwholesome regimen, is augmented and conducted by the deranged Vāyu and vitiates the blood and Pittam, thus giving rise to a kind of abscess which is known as the Āgantuja Vidradhi (traumatic abscess). Symptoms of the Pittaja type likewise mark this type of abscess and fever, thirst and a burning sensation attend it from the very beginning. 9.

The Raktaja Type:—This abscess assumes a black or tawny colour, covered with a large number of black vesicles, and fever and an intolerable burning and pain attended with all the symptoms peculiar to the Pittaja type, mark the present form of the disease. It is called Raktaja Vidradhi. Of external Vidradhis or abscesses, those of the Sānnipātika type should be regarded as incurable. 10—11.

Antara-Vidradhi:—Now we shall describe the characteristic features of internal abscesses (Antara-

Vidrādhi). The Vāyu, Pittam and Kaphah of the body, deranged through eating heavy, incompatible and incongenial (to the physical temperament of the eater) articles of food or of dry, putrid and decomposed substances, or by excessive motion and fatiguing physical exercise, or by voluntary repression of any natural urging of the body or through the eating of food which is followed by an acid reaction, either severally or collectively give rise to a tumour-like (Gulma), raised, or elevated abscess in the interior of the organism, which is often felt to be shaped like an ant-hill. 12-13.

Localities :— They are generally found to be seated at the mouth (neck) of the bladder, or about the umbilicus, or in the sides, or in the Kukshi (inguinal regions), or on the Vrikkas, or on the liver, or in the heart, or on the Kloma, or on the spleen, or in the rectum. Their general characteristics are identical with those of the several types of external abscess. The symptoms of their suppurated or unsuppurated stages should be determined in the light of the chapter on Āmapakvaishanyiam (Ch XVII Sutra) 14-15.

Their specific symptoms :— Now hear me describe the symptoms which specifically mark these internal abscesses according to their seats in the different regions of the organism. An abscess appearing in the rectum (Guda) is marked by the suppression of the flatus (Vāta). Seated in the bladder, it gives rise to difficulty of urination and scantiness of urine. Appearing about the umbilicus it produces a distressing hic-cough and a rumbling sound (Ātopa) in the intestines. Seated in either of the sides (Kukshi) it tends to aggravate inordinately the vāyu of the body. Appearing in the inguinal region it gives rise to an extreme catching pain at the back and waist. Seated in either

of the **Vrikkas** it brings about a contraction of the sides. Appearing on the spleen, it produces symptoms of difficult and obstructed respiration. Seated on the heart it gives rise to an excruciating and piercing pain within its cavity and a drawing pain (**Griaha**) extending all over the body (D R—cough). Seated in the **Liver** its characteristic indications are thirst and difficult breathing (D R—hic-cough) whereas a sort of unquenchable thirst is the symptom which marks its seat on the **Kloma**. 16-17

Prognosis :—An abscess appearing on any vital part (**Marma**) of the organism, whether large or small in size, suppurated or unsuppurated, should be deemed as extremely hard to cure. Discharge from an abscess formed in the region of the organism above the umbilicus and (spontaneously bursting), will flow out through the mouth whereas similar secretions from down the umbilical region of (the abdomen), naturally find an outlet through the fissure of the anus. The case in which the secretions (pus etc) find a downward channel and outlet may end in recovery of the patient whereas the one in which the secretions take an upward course invariably proves fatal. An incision made by surgeon from the outside into an internal abscess, other than the one situated on the heart, or on the bladder or on the umbilicus may occasionally, prove successful, but the one, seated on any of the preceding vulnerable viscera (heart, bladder etc.) of the body and surgically opened invariably ends in death. 18-19

A woman, who has miscarried or has been even safely delivered of a child at term, may be afflicted with a dreadful abscess in the event of her taking injudicious and unwholesome food after parturition. The abscess in such a case, which is attended with extreme

hyper-pyrexia (Dāhajvāta) should be considered as having had its origin to the vitiated blood (Raktaja Vidradhi) accumulated in the organism. The abscess, which appears in the Kukshī (in the iliac region) of a safely delivered woman owing to the presence of the unexpelled blood-clots in those regions after childbirth, should be also diagnosed as a case of Raktaja abscess. The unexpelled blood is called Makkalla. Such an abscess, if not absorbed in the course of a week is sure to suppurate. 20—21.

Differentiating diagnosis of Gulma and Vidradhi* :—Now I shall discuss the features which distinguish a Gulma (internal tumour) from a Vidradhi (internal abscess). It may be asked, how is it that Gulma, (internal tumour) though caused by, and involving the co-operation of the same deranged Doshas as an internal abscess, does not suppurate, while the latter (Vidradhi) does run to suppuration? 22—23.

The answer is that a Gulma (internal tumour), though caused by the same deranged Doshas as a Vidradhi (internal abscess), does not resort to any deranged organic matter, such as flesh, blood, etc., while, on the contrary, in a case of Vidradhi, the diseased flesh and blood of a locality are in themselves transformed into an abscess. An internal tumour (Gulma) is like a water bubble floating and moving about within a cavity

* A Gulma according to Sūtrānta does not suppurate, but the term "Api" (also) contemplates instances in which a Gulma may suppurate as in the case where it has got its basis in the deranged flesh etc. of the locality. Charaka asserts that retarded digestion of the ingested food followed by digestionary acid reaction, colic pain, insomnia with fever and a non relish for food and a sense of oppression, etc. are the symptoms which indicate that suppuration has set in a Gulma, and he advises that it (Gulma) should be treated with poultices, etc.

of the body etc without any fixed root of its own. Hence, it is that a Gulma (internal tumour) does not suppurate at all. Suppuration sets in in an abscess only because it largely contains flesh and blood unlike a Gulma (internal tumour) which is not formed of any such organic matter, and depends only on the aggravated Doshas giving birth to it. Hence, a Gulma does not suppurate at all. 24

Incurable Types :—A case of an internal abscess suppurating about the heart, bladder or umbilicus as well as one of the Tridosha type (appearing in any part of the organism) should be given up as incurable. The abscess in which the marrow suppuriates (generally) becomes fatal. The suppurating process in an internal abscess, which generally affects the underlying bone, is sometimes found to affect the marrow. The suppurated marrow, failing to find an outlet on account of the compactness of the local flesh and bone, produces a sort of burning sensation in the locality which consumes the body like a blazing fire. The disease confined to the bone, like a piercing dirt, torments the patient for a considerable length of time. An incision (made into the affected bone) is followed by the secretion of a fat-like, glossy, white, cold and thick pus. Men, learned in the knowledge of the Medicinal Śāstras, designate such an abscess as an Asthigāta-Vīradhī (abscess of the bone) which involves all the three kinds of deranged Doshas, and is attended with various kinds of pain which mark them respectively. 25-26

Thus ends the ninth Chapter of the Nīdānasthānam in the Sushruta Samhitā which treats of the ætiology of abscess.

CHAPTER X.

Now we shall discourse on the Nidānam of **Visarpa** (crysipelas), **Nādi** (sinus) and **Stana-roga** (diseases affecting the mammae of a woman) 1.

Definition of Visarpa :—The deranged and aggravated Doshas, (Vāyu, Pittam and Kapham) having recourse to, and affecting the Tvaka (Skin), flesh and blood, speedily give rise to a sort of shifting, elevated swelling (Śoṭha) marked by the characteristic symptoms of any of them involved in the case. This swelling tends to extend all over the body. The disease is called **Visarpa** from the fact of its extending or swiftly shifting character (Skr. śrip —to go, to extend) 2.

The Vātaja Type :—The swelling (Śoṭha) is soft and rough and assumes a black colour attended with an aching pain in the limbs and a cutting or piercing pain (in the affected locality). It is further marked by (all the usual) symptoms of the Vātika fever. A case of this type in which uneven flame coloured vesicles or bulbs appear on the affected part through the extreme vitiation (of the Vāyu and Pittam) should be given up as incurable 3

The Pittaja and Kaphaja Types :—The Pittaja Visarpa (crysipelas) rapidly extends (over the body), attended with severe fever, a burning sensation, suppuration and cracking (of the skin). A large number of vesicles appears on the spot which assume a blood-red colour. A case of this type, characterised by the destruction of the local flesh and veins owing to the excessively aggravated condition of the deranged Doshas (Kaphha and Pittam) and a

collyrium-like black colour (of the swelling), should be regarded as incurable. The Kaphaja Visarpa extends slowly and the process of suppuration is tardy. The affected part becomes white, glossy and swollen, and is marked by a slight pain and excessive itching. 4-5.

The Sānnipātika Type :—The Visarpa of the Tridoshaja type is deep-seated and the affected part assumes all colours and is attended with all sorts of pain which are peculiar to the three aforesaid types. The local flesh and veins are destroyed in the suppurating stage of this disease and hence, it should be looked upon as incurable. 6

The Kshataja Type (Erysipelas due to a wound or an ulcer) —The Pittam of a person with a temperament marked by the extreme aggravation of all the three Doshas, in conjunction with the blood, resorts to a wound* in his body and immediately gives rise to Erysipelas (Sopha—lit rash) which assumes a reddish-brown colour, with high fever with a burning sensation, and suppuration in its train, and it is found to be covered with black vesicles to the size of *Kulattha* pulse. 7

Prognosis :—The Vātaja, Pittaja and Kaphaja Visarpas are curable, the Sānnipātika and Khataja ones being incurable. The symptoms, which indicate an unfavourable prognosis in a case of Vātaja or Pittaja Erysipelas, have been described before. Those, which attack the vital parts (Marmas) of the body, can be cured only with the greatest difficulty.† 8.

* Or through the extreme augmentation of all the three doshas in the ulcer (Sadyah kshala-Vrana) according to others.

† Golden coloured (yellow) Erysipelas due to the action of the (deranged) Pittam is incurable (*Pittātma Kāñchana vafuscha ta'ha na sydhayati.*) —D. R.

The Nádi-Vrana :—The pus of an abscess or swelling burrows into the affected part if a person neglects it in its fully suppurated stage, dubious of its being so conditioned, or not, or even neglects to open a fully suppurated abscess. An abscess or swelling is called a Gati Vrana owing to an excessive infiltration of pus, and it is also called a Nádi-vrana owing to the presence of a large number of recesses or cavities in its inside. There are five different types of *Nádi-vrana* (sinuses) such as the Vátaja, Pittaja, Kaphaja, Tridoshaja and Śalyaja. 9—10

The Vátaja, Kaphaja and Pittaja Types :—The Vátaja Sinus is rough and short-mouthed, characterised by an aching pain (in its inside). It exudes a sort of frothy secretion which becomes greater at night and is attended with an aching pain. Thirst, lassitude, heat and a piercing pain (in the affected locality) are the usual accompaniments of the Pittaja types. Fever is present from the beginning and the Sinus exudes a large quantity of hot and yellow coloured secretion which is more by day than by night. The Kaphaja Sinus becomes hard and is characterised by itching and a slight pain (numbed?). It is found to secrete a copious quantity of thick, shiny, white-coloured pus which becomes greater at night. 11-13.

Dvandaja and Tridoshaja Types :—A case of Nádi-Vrana involving the concerted action of any two of the deranged Doshas (Váyu, Pittam and Kapham) and exhibiting symptoms peculiar to both, is called a Dvandaja* one. There are three

* Gáyadása does not read the symptoms of *Dvi-doshaja* (i.e., due to two morbid principles) types of sinus as given in the text which he has rejected as spurious.

types of this class of disease, 'such as the *Vāta-pittaja*, *Vāta-kaphaja* and *Pitta-kaphaja*) A case of *Nādi-vrana*, exhibiting symptoms of the three aforesaid types, and attended with fever and a burning sensation, difficult breathing, dryness of the mouth and syncope, is called *Tridoshaj*. An attack of this type should be regarded as dreadful and fatal casting around the gloom of death. 14-15.

The Śalyaja Nādi-Vrana :—A foreign matter (such as dirt, bone, splinter etc), lodged within the body and invisible to the eye, tends to burst open the skin, etc of the locality along its channel of insertion and gives rise to a type of Sinus. It is characterised by a constant pain, and suddenly and rapidly exudes a sort of hot, blood-tinged, agitated, frothy secretion. This type is called *Śalyaja*. 16

The Stana-Roga :—These may be divided into as many types as the aforesaid *Nādi-Vrana* and are caused by the same exciting factors as the last named malady. The milk-carrying ducts remain closed in the breast of a nullipera thus barring the possibility of the descent of the Doshas through them and of an attack of any disease at that part of the body. On the contrary, such ducts in the breast of a primipara open and expand of their own accord, thus making the advent of diseases possible that are peculiar to the mamma. 17-19

The breast-milk :—The sweet essence of the *Rasa* (lymph chyle) drawn from the digested food courses through the whole body and is ultimately concentrated in the breast of a mother or a woman (big with child) which is called milk. 20.

Its character :—The breast-milk, like semen, lies hidden and invisible in the organism, though

permeating it in a subtle or essential form. The characteristic features of the breast-milk bear analogy to those of semen. The breast milk is secreted, and flows out at the touch, sight or thought of the child in the same manner as the semen is dislodged and emitted at the sight, touch or recollection etc. of a beloved woman. As the strong and unclouded affections of a man are the cause of the emission of semen, so the fondest love of a mother for her children brings about the secretion of her breast-milk. Both semen and breast-milk are the product of the essence of digested food, this essence being converted into milk in women. 21—22

Its abnormal and normal Traits:—

The milk of a mother vitiated by the deranged Vāyu of her system has an astringent taste and floats on water. The milk of a mother vitiated by the deranged Pittam has an acid and pungent taste and becomes marked with a yellow hue,* if left to float on water. The milk of a mother vitiated by the deranged Kapham is thick and slimy and sinks in water. The milk of a mother vitiated by the concerted and simultaneous derangement of the three Doshas of the body is marked by the combination of all the preceding symptoms. An external blow or hurt too (Abhighāta) sometimes produces vitiation of the mother's milk. 23.

The milk (of a mother), which instantly mixes with water, tastes sweet and retains its natural greyish tint, should be regarded as pure. 24.

The bodily Doshas having recourse to the breasts of a woman whether filled with milk or not and vitiating the local flesh and blood give rise to mammary diseases,

* The particle "Cha" in the text indicates that the colour may turn blue or pink in some cases.

(Stana-10ga). All the types of abscess (Vidrādhi) excepting the one called the Raktaja out of the six types described before are found to attack the mammae, and their symptoms should be understood as identical with those of external abscesses. 25

Thus ends the tenth Chapter of the Nidānam Sthānam in the Sushruta Samhitā which treats of the ætiology and symptoms of Erysipelas, Sinus and mammary abscesses.

CHAPTER XL

Now we shall discourse on the Nidānam of Granthi (Glands etc.), Apachi (Scrofula etc), Arvuda (Tumours) and Galaganda (Goitre) 1.

The deranged and unusually aggravated Vāyu etc. (Pittam and Kapham), by vitiating the flesh, blood and fat mixed with the Kapham (of any part of the organism), give rise to the formation of round, knotty, elevated swellings which are called Granthi (Glandular inflammation) 2.

The Dosha-Originated Types :—The swelling (Sopha) of the Vātāja type seems as if it were drawn into and elevated or as if severed or pricked with a needle, cleft in two or drawn asunder or as if cut in two or pierced. The knotty growth assumes a black colour, and is rough and elongated like a bladder. On bursting a granthi of this type exudes clear bright red blood. The Pittaja Granthi is characterised by heat and an excessive burning sensation (in its inside). A pain, like that of being boiled by an alkali or by fire, is felt in the inside. The knotty formation assumes a red or yellowish colour and exudes a flow of extremely hot blood on bursting. The Kaphaja Granthi is slightly discoloured and cold to the touch. It is characterised by a slight pain and excessive itching, and feels hard and compact as a stone. It is slow or tardy in its growth and exudes a secretion of thick white-coloured pus when it bursts. 3-5.

The Medaja Type :—The fat originated Granthi is large and glossy and gains or loses in size with the gain or loss of flesh by the patient. It is marked

by a little pain and an excessive itching sensation and exudes a secretion of fat resembling clarified butter or a gruel, in colour and consistency, made of the levigated paste of sesamum on bursting. 6.

Sirā-Granthi—(aneurism or varicose veins) — The bodily Vāyu in weak and enfeebled persons, deranged by over-fatiguing physical exercises, straining or exertion or by pressure, presses on, contracts, dries or draws up the ramifications of veins (Sirā) or arteries (of the affected locality), and speedily gives rise to a raised knotty formation which is called a Sirā-Granthi. In the event of its being shifting and slightly painful, it can be cured only with the greatest difficulty. Whereas a case in which the knotty formation is painless, fixed, large and situated at any of the vital parts of the body (Marmas), should be deemed incurable* 7.

Apachi—(Sciifula etc.) —The augmented and accumulated fat and Kapham give rise to string of hard glossy, painless, nodular, or elongated granthi swellings) about the joints of the jawbones, at the waist, joint, about the tendons of the neck, about the throat or about the region of the arm-pits. These glands (Granthis) resembling the stones of the Āmalaka fruit or the spawn of fish in shape or like some other shape, are of the same colour as the surrounding skin ; and a string or a large crop of such glandular knots, gradually growing is called Apachi† on account of the extensive nature of their growth. 8-9

* In several editions an additional line is to be found running as men well conversant with symptoms (of *Granthis*) recognise a type of Granthi due to the action of the deranged flesh and blood, which exhibits symptoms identical with those of a tumour (*Manysra'srayam chārvuda lakshanaena tulyam hi drishtamath lakshana-janah*). But Jejjala has rejected it as of questionable authority.

† These glandular formations appear about the root of the penis, about the sides, in the arm-pits and about the throat and the tendons of the neck.

These knotty formations are characterised by itching and a slight pain. Some of them spontaneously burst exuding secretions while others are observed to vanish and re-appear (in succession). Such vanishings, re-appearances, or fresh formations continue for a considerable time. The disease undoubtedly owes its origin to the deranged fat and Kapham, and may only be made amenable (to medicine) with the greatest difficulty lasting for years at a time 10.

Arvuda—(tumour etc.) --The large vegetation of flesh which appears at any part of the body, becomes slightly painful, rounded, immovable and deep-seated, and has its root sunk considerably deep in the affected part, and which is due to the vitiation of the flesh and blood by the deranged and aggravated Doshas (Vāyu, Pittam and Kapham) is called an Arvuda (tumour) by the learned physicians*. The growth of an Arvuda is often found to be slow, and it seldom suppurates. The characteristic symptoms of an Arvuda which owes its origin to the deranged condition of the Vāyu, Pittam, Kapham, flesh or fat, are respectively identical with those, which mark the cases of Granthis, brought about by the same deranged principles of the body. 11.

Raktaja—Arvuda :—The deranged Doshas (Vāyu, Pittam and Kapham) contracting, compressing

They resemble spawns of fish in shape and size and are due to the action of the deranged Vāyu, Pittam and Kapham. The appearance of such glands in the upper part of the body should be attributed to the action of the deranged and aggravated Vāyu. They are extremely hard to cure in as much as their growth (formation) involves the concerted action of the morbid principles (Doshas) of the body --**Bhoja**.

Charaka, who designates this disease as *Gandamūla*, describes its location in regions about the jawbones alone.

* That they having recourse to the flesh, produce deep seated vegetations (of flesh) is the reading adopted by Gay idāsa and others

and drawing the vessels (Śūnā) and blood (of the affected part), raise a slightly suppurated and exuding tumour which is covered with small warts and fleshy tubercles and is called a **Raktārvuda**. This tumour is rapid in its growth and exudes a constant flow of (vitiated) blood. The complexion of the patient owing to depletive actions and other concomitant evils of hæmorrhage becomes pale and yellow. The type should be considered incurable on account of its having its origin in the blood.* 12—13

Mānsārvuda :—The flesh of any part of the body hurt by an external blow etc. (hitting it with a log of wood—D R.) and vitiated in consequence, gives rise to a sort of swelling (tumour) which is called **Mānsārvuda**, which originates through the action of the deranged Vāyu. It is glossy, painless, non-suppurating, hard as a stone, immobile, and of the same colour as the surrounding skin. Such a tumour appearing in a person addicted to meat diet becomes deep seated owing to the consequent vitiation of the bodily flesh and soon lapses into one of an incurable type. 14.

Prognosis :—Even of the aforesaid curable types (such as the Vātaja, etc.), the following types of Arvudam (tumours) should be likewise regarded as incurable, those which appear in the cavity of a Srota channel or an artery, or any vulnerable joint of the body and are characterised by any sort of secretion and also immovable, should be deemed incurable. An Arvudam (tumour) cropping up on one existing from before is

* Although all types of Arvuda have their origin in the deranged flesh and blood, preponderant action of the deranged blood is found in *Raktārvuda*, while a dominant action of the deranged flesh marks the *Mānsārvuda* type.

called **Adhyarvudam**, which should be likewise deemed as incurable. A couple of contiguous **Arvudam** (tumours) cropping up simultaneously or one after another is called **Dviarvudam**, which should be held as equally incurable (with one of the foregoing types). An **Arvuda** (tumour) of whatsoever type, never suppurates owing to the exuberance of the deranged **Kapham** and fat as well as in consequence of the immobility, condensation and compactness of the deranged **Doshas** (**Vāyu**, **Pittam** and **Kapham** involved in the case or out of a specific trait of its own nature 15-16

Definition of Galaganda (Goitre).—The deranged and aggravated **Vāyu** in combination with the deranged and augmented **Kapham** and fat of the locality affects the two tendons of the neck (**Manyās**) and gradually gives rise to a swelling about that part of the neck characterised by the specific symptoms of the deranged **Doshas** (**Vāyu** or **Kapham**) and principles involved in the case. The swelling is called **Galaganda** (Goitre) 17

Symptoms of the Dosha-originized Types :—The swelling or tumour in the **Vātaja** goitre is characterised by a pricking pain (in its inside) marked by the appearance of blue or dark coloured veins (**Śirā**) on its surface. It assumes a vermilion or tawny brown hue. The goitre becomes united with the local fat in course of time, and gains in size, giving rise to a sense of burning in the throat, or is characterised by the absence of any pain at all. A **Vātaja** goitre is rough to the touch, slow in its growth, and never or but rarely suppurates. A sense of dryness in the throat and the palate as well as a bad taste in the mouth likewise marks this type. The swelling in the **Kaphaja** Type assumes a large shape and becomes hard, firm, cold

and of the same colour (white) There is but slight pain and the patient feels an irresistible inclination to scratch the part. It is slow in its progress and suppuration is rare and tardy A sweet taste is felt in the mouth and the throat and the palate seem as if smeared with a sort of sticky mucous. 18-20.

Symptoms of the Medaja Type:—

The swelling is glossy, soft (heavy—D.R.) and pale-coloured. It emits a fetid smell and is characterised by excessive itching and an absence of pain. It is short at its root and hangs down from the neck in the shape of a pumpkin (Alávu), gradually gaining its full rotundity at the top. The size of the goitre is proportionate to the growth or loss of flesh of the body. The face of the patient looks as if it has been anointed with oil and a peculiar rumbling sound is constantly heard in the throat. 21.

Prognosis:—A case of goitre attended with difficult respiration, a softening of the whole body, weakness, a nonelish for food, loss of voice as well as the one which is more than of a year's standing should be abandoned by the physician as incurable. 22.

Metrical Text:—A pendent swelling whether large or small and occurring about the region of the throat and resembling the scrotum in shape is called a Gala-Ganda. 23.

Thus ends the eleventh Chapter of the Nidāna Sthānam in the Sushrūtā Samhitā which treats of the Nidānam of Granthi, Scrofula, etc.

CHAPTER XII

Now we shall discourse on the Nidānam of **Vridhhi** (hydrocele, hernia, scrotal tumours etc.), **Upadanśa** (disease of the genital organ), and **Ślipada** (elephantiasis) 1

Classes : There are seven different types of **Vridhhi** such as the **Vātaja**, **Pittaja**, **Kaphaja**, **Raktaja**, **Medaja**, **Mutrāja** and the **Antra-vridhhi**. Of these both the **Mutrāja-vridhhi** (hydrocele or extravagation of the urine), and **Antra-vridhhi** types, though owing their origin to the deranged condition of the bodily **Vāyu**, have been so named after the organic matters or anatomical parts (urine, iliac colon etc.) involved in them. 2.

Definition and Premonitory symptoms :—Any of the deranged **Doshas** (**Vāyu**, **Pittam** etc.) lying in the nether regions of the body may resort to the spermatic cords (**Dhamani**) and give rise to a swelling and inflammation of **Phalacosha** (scrotal sac) which is called **Vridhhi** (scrotal tumour etc.) A pain in the bladder, scrotum penis and the waist (**Kati**) incarceration of the **Vāyu** and the swelling of the scrotum, are the premonitory symptoms of the disease 3—4

The Dosha-originated Types :—The type in which the scrotum becomes distended with **Vāyu** like an inflated air-drum, marked by roughness of (its surface) and the presence of a varied sort of **Vātaja** pain (in its interior) without any apparent cause is called **Vātaja Vridhhi**. The swollen scrotum, of the **Pittaja Vridhhi**, assumes the colour of a ripe

Audumvara fruit and is attended with fever, a burning sensation and heat in the affected part. It is of a marked rapid growth and speedy suppuration (of the scrotum) The swollen organ in the **Kaphaja Vridhhi** becomes hard and cold to the touch accompanied by little pain, and itching (in the affected part. In the **Raktaja** type the swollen scrotum is covered over with black vesicles, all other symptoms of the type being identical with those of the **Pittaja** one. In the **Medaja** type the swollen scrotum looks like a ripe *Tāla* fruit and becomes soft, glossy and slightly painful. The patient feels a constant inclination to scratch the part. The **Mutrajā-vridhhi** (hydrocele) owes its origin to a habit of voluntary retention of urine, its characteristic symptoms being softness and fluctuation on the surface of the swollen scrotum like a skin-bladder filled with water, painful urination, pain in the testes and swelling of the scrotum 5

Antra-vridhhi (Inguinal hernia) —The local *Vāyu* enlaged and unusually aggravated by lifting a great load, wrestling with a stronger person, violent physical strain or a fall from a tree and such like physical labour doubles up a part of the small intestine and presses it down into the inguinal region, lying there strangulated in the form of a knot (*Granthi*) which is known as **Antra-vridhhi** (inguinal hernia) The part not properly attended to at the outset descends into the scrotum which becomes ultimately elongated and intensely swollen and looks like an inflated air-bladder. It (hernia) ascends upwards under pressure, making a peculiar sound, (gurgling); while let free it comes down and again gives rise to the swelling of the scrotum. This disease is called **Antra-vridhhi** and is incurable. 6.

The Upadansâsam:—An inflammatory swelling of the genital, whether ulcerated or not is called Upadansâ*. The disease owes its origin to the action of the local Doshas, aggravated by promiscuous and excessive sexual intercourse, or by entire abstinence in sexual matter ; or by visiting a woman, who had observed a vow of lifelong continence or one who has not long known a man, or one in her menses or one with an extremely narrow or spacious vulva, or with rough or harsh or large pubic hairs, or by going unto a woman whose parturient canal is studded with hairs along its entire length ; or by visiting a woman not amorously disposed towards the visitor and vice versa ; or by knowing a woman who washes her private parts with foul water or neglects the cleanliness of those parts, or suffers from any of the vaginal diseases, or one whose vagina is naturally foul ; or by going unto a woman in any of the natural fissures of her body other than the organ of copulation (Vi-yoni) ; or by pricking the genital with finger nails, or biting it with the teeth, or through poisonous contact, or through practice of getting the (penis abnormally elongated by pricking the) bristles of a water parasite (*Sûka*) into its body ; or by practising

* Upadansâ is not syphilis whole to whole. Certain types of Upadansâ such as the Raktaja and Sânnipâtika types which entail the destruction of the organs concerned exhibit certain symptoms which are common to syphilis as well. The secondary eruptions and tertiary symptoms of syphilis are not mentioned by the A'urvedic Rishis who used to treat it only with vegetable medicines and this fact intimates the probability that the secondary and tertiary symptoms of syphilis might not arise by their efficient and able treatment from the very beginning, preventing the absorption of the poison into the system. The practice of ablution, so common among the Hindus, might be taken into consideration as one of the important preventive factors. Maharshi Charaka has comprised it within the chapter on 'Senile Impotency'.—Ed.

masturbation, or any unnatural offence with female quadrupeds; or by washing the genitals with filthy or poisonous water; or through neglect to wash the parts after coition, or voluntary suppression of a natural flow of semen or urine or through any hurt or pressure on the organ etc. The inflammation of the genital thus engendered is called Upadansā. The disease admits of being divided into five distinct types, such as, the Vātaja, Pittaja, Kaphaja, Tridoshaja and the Raktaja 7—8.

The symptoms of different Types:—

The roughness of the genitals, the bursting or cracking of the integuments of the penis and prepuce etc., numbness and swelling of the affected part which is perceived rough to the touch and the presence of a varied sort of pain peculiar to the deranged Vāyu are the characteristic indications of the Vātaja type. In the Pittaja type fever sets in (from the very beginning), the penis becomes swollen and assumes the colour of a ripe Indian fig (reddish-yellow), attended with a sort of intolerable burning sensation. The process of suppuration is rapid and a variety of pain peculiar to the deranged Pittam, (distinguishes it from the other forms of the disease). The penis becomes swollen, hard and glossy in the Kaphaja type marked by itching and a variety of pain characteristic of the deranged Kapham. In the blood-originated type (Raktaja) the organ bleeds heavily and is covered with the eruptions of large black vesicles. Fever, thirst, (Śosha), burning sensations and other characteristic symptoms of the deranged Pittam are also present. Palliation is all that can be occasionally effected in these cases. Symptoms specifically betraying to each of the Vātaja, Pittaja and Kaphaja types concurrently manifest themselves in the Sānnipātika type of Upa-

danśa. The organ cracks, the ulcers or cancers become infested with parasites and death comes in to put a stop to the suffering of its wretched victim. 9-13.

Ślipadam (Elephantiasis):—The disease in which the deranged Vāyu, Pittam and Kapham, taking a downward course, are lodged in the thighs, knee-joints, legs and the inguinal regions and spread to the feet in course of time and gradually give rise to a swelling therein, is called Ślipadam. There are three types of Ślipada severally due to the actions of the deranged Vāyu, Pittam and Kapham. 14-15.

The symptoms of the different Types:—The swollen parts assume a black colour in the Vātaja type and are felt rough and uneven to the touch. A sort of spasmodic pain without any apparent reason is felt (at intervals in the seat of the disease), which largely begins to crack or burst. The Pittaja type is characterised by a little softness and yellowish hue (of the diseased localities) and often attended with fever, and a burning sensation. In the Kaphaja type the affected localities become white, glossy, slightly painful, heavy, contain large nodules (Gianthis) and are studded over with crops of papillæ. 16

Prognosis:—A case of elephantiasis of a year's growth as well as the one which is characterised by excessive swelling (of the affected parts), exudation and vegetation of knotty excrescences resembling the summits of an ant-hill should be given up as incurable. 17.

Memorable Verses:—A preponderance of the deranged Kapham marks the three types of the disease, in as much as, the heaviness and largeness (of the swelling) can not be brought about by any other factor than Kapham. The disease is peculiar to countries

in which large quantities of old rain-water remain stagnant during the greater part (lit.— all seasons) of the year making them damp and humid in all seasons 18-91

The disease is usually found to be confined to the legs and hands of men but cases are on record in which it has extended to the ear, nose, lips and the regions of the eyes. (Penis—Mádhaba-Nidánam). 20.

Thus ends the twelfth Chapter of the Nidánasthánam in the Sus'ruta Samhitá which treats of the Nidánam of scrotal tumours, hernia, Upadans'am and elephantiasis.

CHAPTER XIII.

Now we shall discourse on the Nidánam of **Kshudrarogam** (diseases which are known by the general name of minor ailments). 1.

These diseases are generally divided into forty-four distinct varieties or types such as — Ajagalliká, Yavaprakshyá, Andhálaji, Vivritá, Kachchapiká, Valmika, Indravriddhá, Panasiká, Páshána-garddabha, Jála-garddabha, Kakshá, Vishphota, Agni-rohini, Chippam, Kunakha, Anusáye, Vidáiká, Sarkará-Arbudam, Pámá, Vicharchiká Rakasá, Pádadáiká, Kadara, Alasa, Indralupta, Dárunaka, Arunbhiká, Palitam, Maśuriká, Yauvana-pidaká, Padmini-kantaka, Yatumani, Maśaka, Charmakila, Tilakálaka, Nyachchya, Vyanga, Parivartiká, Avapátiká, Niuuddha-prakáśa, Niruddha-guda, Ahiputanam, Vrishana-kachchu, and Guda-bhramsá * 2.

Metrical Texts :—The species of pimples or eruptions which are shaped like the *Mudga* pulse and are glossy, knotty and painless is called *Ajagalliká*. They are of the same colour (as the surrounding skin) and their origin is usually ascribed to the action of the deranged Kapham and Váyu. The disease is peculiar to infants.† **Yávaprakshyá:—**The eruptions

* Brahmadeva comprising *Garddavika*, *Irvulika*, *Gandhapáriká* and *Tilakálaka* in the list reads it as consisting of thirty-four different species. Jejjata does not hold the four forms of disease commencing with *Garddavika*, etc. as included within the list. Gayadása, finding them included in all the recensions reads *Garddabhiká*, etc. as included within the list of *Kshudra Roga*, and Pámá etc. as included within the list of *Kshudra Kushtam*.

† They afflict certain infants—Dallana.

which are shaped like the barley-corns, extremely hard, thick at the middle, knotty and affect (lit — confined to) the flesh are called Yavaprakshyá. They are due to the action of the deranged Váyu and Kapham. **Andhálaji** —The dense, raised, slender-topped eruptions which appear in circular patches and exude a slight pus are called Andhálaji. They are due to the action of the deranged Váyu and Kapham. **Vivritá:**—Pustules or eruptions, which are coloured like a ripe fig fruit and are flat-topped and appear in circular patches with an intolerable burning sensation, are called Vivrita. They are due to the action of the deranged Pittam 3—6.

Kachchapiká:—A group of five or six hard, elevated, nodular eruptions (Granthis), arranged in the shape of a tortoise (which may appear on the surface of any part of the body), are called Kachchapiká. They are due to the action of the deranged Kapham and Váyu. **Valmika.**—The knotty undurated eruptions (Granthis) which gradually appear on the soles, palms, joints, neck and on the regions above clavicles and resemble an ant-hill in shape, slowly gaining in size are called Valmika. Ulcers attended with pricking pain, burning, itching sensations and exuding mucopurulent discharges appear around the aforesaid eruptions (Granthis). The disease is due to the action of the deranged Kapham, Pittam and Váyu. 7—8.

Indravriddhá:—Pimples or eruptions (Pidaká) arising (on the surface of the body), arranged in the same circular array as marks the distribution of the seed (sacks) in a lotus flower are called Indravriddhá by the physicians. The disease is caused by the action of the deranged Váyu and Pittam. **Panasika.**—Eruptions (Pidaká) of a sort of extremely painful pustules all over the back or the ears which resemble the

Kumuda bulb in shape, are called *Panasikā*. They are due to the action of the deranged Kapham and Vāyu. *Pāshāna-Garddabha* —A slightly painful and non-shifting hard swelling, which appears on the joint of the jawbones, (*Hanu-sandhi*, is called *Pāshāna-Garddabha*. The disease is the effect of the deranged Kapham and Vāyu. *Jāla-Garddabha* —A thin and superficial swelling, which like erysipelas is of a shifting or progressive character and is further attended with fever and a burning sensation and which is but rarely found to suppurate, is called *Jāla-Garddabha* * The disease results from the deranged Pittam. *Kakshā* —The disease characterised by the eruptions of black and painful vesicles (*Shphota*) on the back, sides, and on the region about the arm-pits, is called *Kakshā*. The disease is likewise attributed to the action of the aggravated Pittam. *Vishphotaka* —The disease in which eruptions of burnlike vesicles (*Shphota*) crop up on the whole surface of the body, or on that of any particular locality, attended with fever, is called *Vishphotaka*. The disease is the effect of vitiated blood and Pittam. 9—14.

Agni-Rohini† :—Vesicles (*Shphota*) having the appearance of burns and cropping up about the waist

* The circular raised spots studded with vesicles are called *Garddabha*. They are reddish and painful and produced by the action of Vāyu and Pittam. *Gayāḍasa* reads it so.

† *Dallana* quotes from another *Tantram* that the morbid principles in men, aggravated through the action of the enraged and augmented Pittam and blood, give rise to vesicles (blisters) like red-hot charcoal by breaking open the flesh at the waist, attended with extreme pain, high fever and an insufferable burning sensation which, if not properly remedied, bring on death within a fortnight, or ten days of their first appearance. These (vesicles) are called *Vahnī Rohini*. And again from another work he cites that a case of *Vahnī-Rohini* due to the action of the deranged

(Kakshá) by bursting the local flesh, and which is attended with fever and a sensation as if a blazing fire is burning in the inside (of the affected part), are called Agni-Rohini. The disease is caused by the concerted action of the three deranged Doshas (Váyu, Pittam and Kapham) It is incurable and ends in the death of the patient either on the seventh*, tenth or fifteenth day (of its first appearance) 15.

Chippam :—The deranged Váyu and Pittam vitiating the flesh of the finger-nails, give rise to a disease which is characterised by pain, burning and suppuration. The disease called Chippam, is also denominated *Upanakha* and *Kshataroga Kuna-kham* —The nails of fingers becoming rough, dry, black, and injured through the action of the Doshas enraged through the effect of a blow, are called Kunakha (bad nails) It is also called *Kulinam*. **Anusayi** — A small swelling (on the surface of the body) which is of the same colour (as the surrounding skin), but is deep-seated, and suppurates in its deeper strata, is called *Anusayi* by the physicians. The disease is the effect of the deranged Kapham. **Vidáriká** —A round reddish swelling rising either on the auxiliary or inguinal regions in the shape of a gourd (*Viddárikanda*) is known as Vidáriká. The disease is due to the concerted action of the deranged Váyu, Pittam and Kapham and is characterised by symptoms peculiar to each of them. 16—19,

Kapham proves fatal within a fortnight, that due to the deranged Pittam, within ten days, and that due to the deranged Váyu, within a week.

* The patient dies on the seventh day in a case of disease marked by the dominant Váyu, on the tenth day in a case marked by the dominant Pittam and on the fifteenth day in a case of dominant deranged Kapham.

Śarkarārbudam :—The deranged Vāyu and Kapham having recourse to and affecting the flesh, veins (Śīrā), ligaments (Snāyu) and fat give rise to a sort of cyst (Granthi) which when it bursts exudes a copious secretion in its nature somewhat like honey, clarified butter or Vasā. The aforesaid Vāyu, when aggravated through excessive secretion, dries and gathers the flesh up again in the shape of (a large number of) gravel-like concretions (Śaṅkarā) known accordingly as Śarkarārbudam. A fetid secretion of varied colour is secreted from the veins (Śīrā) in these Granthis which are sometimes found to bleed suddenly. The three varieties of the skin disease called Pāma (Eczema), Vicharchikā (Psoriasis) and Rakasā have already been discussed under the head of Kushtham (Chapter. V) 20—21

Pādadārikā :—The soles and feet of a person of extremely pedestrian habits become dry (and lose their natural serous moisture). The local Vāyu thus aggravated gives rise to peculiar painful cracks (Dāri in the affected parts) which are called Pādadārikā. **Kadara** :—The knotty (Granthi), a painful, hard growth raised at the middle or sunk at the sides, which exudes a secretion and resembles an Indian plum (Kola—in shape), and appearing at the soles (palms according to—Bhoja) of a person as an outcome of the vitiated condition of the local blood and fat produced by the deranged Doshas incidental to the pricking of a thorn etc or of gravel is called a Kadara (corns). **Alasa** :—An affection, caused by contact of poisonous mire and appearing between the toes, which is characterised by pains, burning, itching and exudation, is called Alasa. 22—25.

Indralupta :—The deranged Vāyu and Pittam having recourse to the roots of the hairs bring about their

gradual falling off, while the deranged blood and Kapham of the locality fill up those pores or holes, thus barring their fresh growth and recrudescence. The disease is called *Indralupta*,* *Rujya* or *Khālitya* (Alopecia). *Dārunaka*:—The disease in which the hairy parts of the body (roots of hairs) become hard, dry and characterised by an itching sensation is called *Dārunaka*. The disease is due to the action of the deranged Kapham and Vāyu. *Arunshikā*:—Ulcers (*Arunshi*) attended with mucopurulent discharges and furnished with a number of mouths or outlets and appearing on the scalps of men as the result of the action of local parasites and of the deranged blood and Kapham (of the locality) are called *Arunshikā*. *Palitam*:—The heat and Pittam of the body having recourse to the region of the head owing to overwork, fatigue, and excessive grief or anger, tend to make the hair prematurely grey, and such silvering of the hair (before the natural period of senile decay) is called *Palitam*. *Masurikā* (variola):—The yellow or copper-coloured pustules or eruptions attended with pain, fever and burning and appearing all over the body, on (the skin of) the face and inside the cavity of the mouth, are called *Masurikā*. *Yauvana-pidakā*:—(*Mukhadushikā*):—The pimples like the thorns of a *Sālmali* tree, which are found on the face of young men through the deranged condition of the blood, Vāyu and Kapham, are called *Yauvana-pidakā* or pimples of youth. *Padmini-Kantaka*:—The circular, greyish patches or rash-like eruptions

* Women are generally proof against this disease owing to their delicate constitution and to their being subjected to the monthly discharge of vitiated blood and at the same time to their undergoing no physical exercise, and hence there is little chance of the bodily Pittam being deranged and bringing on this disease.

studded over with thorny papilla of the skin resembling the thorns on the stem of the lotus marked by itching are called Padmini-kantaka. The disease is due to the deranged condition of the Vāyu and Kapham. **Yatumanī (mole)** :—The reddish, glossy, circular, and painless, congenital marks (Sahajam) or moles on the body not more elevated (than the surrounding skin) are called Yatumanī. The disease is due to the deranged condition of the blood and Pittam. 26—33

Maśaka (Lichen) :—The hard, painless, black and elevated eruptions on the body (skin) resembling the Māsha pulse in shape, caused by the aggravated condition of the bodily Vāyu are called Maśaka. **Tilakālaka** :—The black painless spots on the skin about the size of a sesamum seed and level with the skin are called Tilakālaka. This disease is caused through the aggravated condition of the Vāyu, Pittam and Kapham.† **Nyachcham** :—The congenital, painless, circular, white or brown (Śyāva) patches on the skin, which are found to be restricted to a small or comparatively diffused area of the skin, are called Nyachcham. **Charmakila** (hypertrophy of the skin) :—The causes and symptoms of the disease known as Charmakila have been already described (under the head of the Arśa-Nidānam) **Vyanga** :—The Vāyu being aggravated through wrath and over-fatiguing physical exercise, and surcharged with Pittam, and suddenly appearing on the face of a person, causes thin, circular, painless and brown-coloured patches or stains. They are known by the name of Vyanga * 34-38.

* According to certain authorities it is due to the absorption of blood by Vāyu and Pittam.

† According to others the spot goes by the name of *Nvlikam*, if it is black coloured and appears anywhere other than on the face.

The Parivartiká :—The vital Váyu (Vyána) aggravated by such causes as excessive massage (masturbation), pressure, or local trauma, attacks the integuments of the penis (prepuce) which being thus affected by the deranged Váyu forms into a knot-like structure and hangs down from the glans penis. The disease known as Parivartiká or Phymosis is due to the action of the deranged Váyu aggravated by any extraneous factor. It is marked by pain and burning sensation, and sometimes suppurates. When the knotty growth becomes hard and is accompanied by itching, then it is caused by the aggravated Kapham 39.

Avapátiká :—When the integuments of the prepuce is abnormally and forcibly turned back by such causes as coition under excitement, with a girl (before menstruation and before the rupture of the hymen and consequently with a narrow external orifice of the vagina) or masturbation or pressure or a blow on the penis, or a voluntary retention of a flow of semen or forcible opening of the prepuce, the disease is called Avapátiká or paraphymosis. **Niruddha-prakása :—**The prepuce affected by the deranged Váyu entirely covers up the glans penis and thus obstructs and covers up the orifice of the urethra. In cases of partial obstruction a thin jet of urine is emitted with a slight pain. In cases of complete closing the emission of urine is stopped without causing any crack or fissure in the glans penis in consequence. The disease is called Niruddha-prakása which is due to the deranged Váyu and is marked by pain (in the glans penis). 39-41.

Niruddhaguda :—The Váyu (Apána) obstructed by the repression of a natural urging towards defecation stuffs the rectum, thus producing constriction of its passage and consequent difficulty of defeca-

tion. This dreadful disease is known as Niruddha-gudam (stricture of the rectum) which is extremely difficult to cure. **Ahiputana** —A sort of itch-like eruptions appearing about the anus of a child owing to a deposit of urine, perspiration, feces etc consequent on the neglect in cleansing that part. The eruptions which are the effects of the deranged blood and Kapham soon assume an Eczematous character and exude a purulent discharge on account of constant scratching. The Eczema (Vrana) soon spreads, and coalesces and proves very obstinate in the end. The disease is called Ahiputana. **Vrishana-kachchu** —When the filthy matter, deposited in the scrotal integuments of a person who is negligent in washing the parts or in the habit of taking daily ablutions, is moistened by the local perspiration, it gives rise to an itching sensation in the skin of the scrotum, which is speedily turned into running Eczema by constant scratching of the parts. The disease is called Vrishana-kachchu and is due to the aggravated condition of the Kapham and blood. **Guda-Bhransa** —A prolapse or falling out of the anus (due to the Vāyu) in a weak and lean patient through straining, urging or flow of stool as in dysentery is called Guda-Bhransa or prolapsus ani. 42—45.

Thus ends the thirteenth Chapter of the Nidāna Sthānam in the *Suśruta Samhitā* which treats of the Nidānam of minor ailments.

CHAPTER XIV.

Now we shall discourse on the Nidánam of the disease known as **Śukadosha**. 1.

Any of the eighteen different types of the disease may affect the genital (penis) of a man who foolishly resorts to the practice of getting it abnormally elongated and swollen by plasteing it with Śuka (a kind of irritating water insect) and not in the usual officinal way.

Classification :—Diseases, which result from such malpractices, are known as,—Sarshapiká, Ashthiliká, Grathitam, Kumbhiká, Alají, Mriditam, Sammudhapidaká, Avamantha, Pushkaiiká, Sparsáháni, Uttamá, Śatoponaka, Tvakapáka, Śonítáivudam, Mánśárvudam, Mánśapáka, Vidiadhi and Tilakálak. 2.

Metrical Texts :—The tiny herpetic eruptions (Pidaká) which resemble the seeds of white mustard in shape and size, (and are found to crop up on the male organ of generation) on account of a deranged condition of the blood and Kapham, as the result of an injudicious application of Śuka plasters are called **Sarshapiká** by the wise. Eruptions of hard stone-like pimples, (Pidaká) irregular at their sides or edges and which are caused by the aggravation of the local Váyu by the use of a plaster of the poisonous Śuka, are called **Ashthiliká**. The knotty Granthis (nodules) on the penis owing to its being frequently stuffed with the bristles of a Śuka insect are called **Grathitam**. This type is caused by the deranged action of the Kapham. A black wart resembling the stone or seed of a jambolin fruit in shape is called **Kumbhiká**. This type is due to the deranged condition of the blood and Pittam 3-5

An **Alaji** (incidental to an injudicious application of Suka on the penis) exhibits symptoms, which are identical with those manifested by a case of Alaji in Prameha (Ch vi). A wart (pāpillōma) attended with swelling of the part and caused by the aggravated Vāyu on the hard and inflamed penis causing pressure (on the urethra) is called **Mriditam**. The pustule or eruption appearing on the penis on account of its being extremely pressed by the hand (for the insertion of the hairs of the Suka) in its doosum is called **Sammudhāpidakā** (It is the outcome of the aggravated Vāyu*) A large number of elongated pustules on the penis (incidental to an application of Suka to the part) which burst at the middle, causing pain and shivering, is called **Avamantha** (epithelioma). 6—10.

The **Pushkarikā** type of the disease is marked by the eruptions of small pimples around the principal one. The type has its origin in the deranged condition of the blood and Pittam, and is so called from the part of the excrescences being arranged in rings or circles like the petals of a lotus flower in shape. A complete anaesthesia (of the affected organ) owing to the vitiated blood by the injudicious application of a Suka is called **Sparsāhāni**. Pustules appearing on the penis through the vitiation of the local blood and Pittam by such constant applications are called **Uttamā**. A suppuration of the prepuce under the circumstance is called **Tvakapakā**. There is fever with a burning sensation in the affected organ. The disease is due to the vitiated condition of the blood and Pittam. 11—15.

The type of the disease in which the penis is marked by the eruption of black vesicles and is covered over with a large number of red pimples or pustules with

* According to Dallana it is due to the action of Vāyu and blood

an excruciating pain in the ulcerated region of the organ is called *Śonitārvudam*. The vegetation of a fleshy tumour on the penis (incidental to a blow on the organ to alleviate the pain of inserting the hairs of the *Suka* insect into its body), is called *Mānsārvudam*. A sup-puration as well as sloughing of the penis attended with different kinds of pain which severally mark the deranged *Vāyu*, *Pittam* and *Kapham* is called *Mānsapāka*. This type is caused by the concerted action of the deranged *Vāyu*, *Pittam* and *Kapham* 15-18

The specific symptoms of a *Tridoṣhaja Vidradhi* as described before (Chap. ix.) mark the one which affects the penis (owing to an injudicious application of the highly poisonous irritant *Suka* to the organ). The disease is called *Vidradhi*. A process of general sup-puration and sloughing of the organ marks the type which is produced by the application of a black *Suka* or one of a variegated coloured insect of the same species. The type is called *Tilakālaka*, and should be regarded as *Tridoṣhaja* one 19 - 21.

Prognosis :—Of the above enumerated malignant diseases of the penis, those known as *Mānsārvuda*, *Mānsapāka*, *Vidradhi* and *Tilakālaka* should be deemed as incurable 22.

Thus ends the fourteenth Chapter of the *Nidana Sthānam* in the *Suśruta Samhitā* which treats of *Nidānam* of different types of *Śulakoṣha*.

CHAPTER XV.

Now we shall discourse on the Nidánam of **Bhagnam** (fractures and dislocations etc. of bones). 1

Various kinds of fracture may be caused from a variety of causes, such as by a fall, pressure, blow, violent jerking or by the bites of ferocious beasts etc. These cases may be grouped under the two main subdivisions such as, **Sandhi-Muktam** (dislocation) and **Kánda-Bhagnam** (fracture of a kánda) 2.

Cases of Sandhi-muktam (dislocation) may be divided into six different types, such as the *Utplishtam*, *Viślishtam*, *Vivartitam*, *Adhah-Kshiptam*, *Ati-kshiptam* and *Tiryak-kshiptam* 3

General features of a dislocation :—

Incapability of extension, flexion, movement, circumduction and rotation (immobility, considered in respect of the natural movements of the joint), of the dislocated limb, which becomes extremely painful and cannot bear the least touch. These are said to be the general symptoms of a dislocation. 4

Diagnostic symptoms of a dislocation :—In case of a friction of a joint by two articular extremities (*Utplishtam*) a swelling is found to appear on either side of the articulation attended with a variety of pain at night. A little swelling accompanied by a constant pain and disordered function of the dislocated joint, marks the case of simple-looseness (*Viślishtam*) of the articulation; while pain and unevenness of the joint owing to the displacement of the connected bones distinguish a case of *Vivartitam* (lateral displacement). An excruciating pain, and looseness of the dislocated

bone are the symptoms which characterise a case in which a dislodged bone is seen to drop or hang down from its joint (*Adhah-kshiptam*) In a case of abnormal projection (*Ati-kshiptam*), the dislocated bone is removed away from its joint which becomes extremely painful A case of oblique dislocation (*Tiryak-kshiptam*) is marked by the projection or displacement of the bone on one side accompanied by a sort of intolerable pain. 5

Different kinds of Kánda Bhagnam :—Now we shall describe the Kánda-Bhagnam (fracture etc.) Fractures may be divided into twelve different kinds which are known as, *Karkatakam*, *Aśvakarnam*, *Churnitam*, *Pichchitam*, *Asthi-chchalitam*, *Kánda-bhagnam*, *Majjāgatam*, *Atipátitam*, *Vakram*, *Chchinnam*, *Pátitam* and *Sphutitam*. 6

General symptoms of Kánda-bhagnam :—A violent swelling (about the seat of fracture) with throbbings or pulsations, abnormality in the position (of the fractured limb), which cannot bear the least touch, crepitus under pressure, a looseness or dropping of the limb, the presence of a variety of pain and a sense of discomfort in all positions are the indications which generally mark all kinds of fracture (*Kánda-bhagnam*). 7.

Diagnostic symptoms :—The case where a fractured bone, pressed or bent down at its two articular extremities, bulges out at the middle so as to resemble the shape of a knot (*Granthi*), is called *Karkatam* The case where the fractured bone projects upward like the ear of a horse is called *Aśvakarnam*. The fractured bone is found to be shattered into fragments in a case of the *Churnitam* or comminuted kind which can be detected both by palpation and crepitation A smashed condition of the fractured bone marks a

case of the **Picchehitam** kind which is often found to be marked by a great swelling. The case where the covering or skin of the bone (periosteum) is cast or splintered off is called the **Asthi-chohallitam**. The case where the completely broken or severed bones are found to project through the local skin, is called **Kānda-bhagnam** (compound). The case where a fragment of the fractured or broken bone is found to pierce into the bone and dig out the marrow, is called **Majjānugatam**, (Impacted fracture). The case where the fractured bone droops or hangs down is called **Ati-pātitam**. The case where the unloosened bone (from its position) is bent down in the form of an arch is called **Vakram**. The case where only one articular extremity of the bone is severed is called **Chhinnam**. The case where the bone is slightly fractured and pierced with a large number of holes, is called **Pātitam**, an excruciating pain being the leading indication. The case where the bone largely cracked and swollen becomes painful as if stuffed with the bristles of a Śuka insect is called **Sphutitam** (Greenstick fracture). Of the several kinds of fracture, cures are effected with extreme difficulty in a case of the **Churnitam**, **Chhinnam**, **Ati-pātitam** or **Majjānugatam** kind. A case of displacement or laxation occurring in a child or in an old or weak patient or in one suffering from asthma (Śvasa) or from any cutaneous affection (Kushtha) or Kshata-Kshina disease is difficult to cure. 8.

Memorable verses:—The following cases are to be given up as hopeless—*viz* fracture of the pelvic bone (or of bones that are of this description, wherever they may be situated); dislocation of the pelvic joints; compound fracture of the thigh bone or of the flat bones), fracture into small pieces of the

frontal bone or its dislocation ; simple fracture of the breast-bones, back-bone and temporal and cranial bones. If the dislocations and fractures be improperly set from the outset (*Ádita*)* or if the union be anyhow disturbed there is no hope for recovery. 9—11.

If fractures happen at any time of the first three stages of adult life which has been described before (vide *Sutrasthāna* Chap. XXXV.) and if they are set up by an able surgeon they have a great chance of being united. 12.

A bending of a gristle or cartilage (*Taruna*) is called its fracture. A *Nalaka* (long bone) bone is usually found to be severed. A *Kapāla* bone is found to be cracked, while a *Ruchaka*† (tooth) is found to be splintered off. 13

* The word *Adita* may be taken into the sense of congenital malformation which is beyond remedy.

† The presence of the particle 'cha' denotes *Valya-asthi*.

Thus ends the fifteenth Chapter of the *Nidāna Sthānam* in the *Sus'ruta samhita* which treats of the *Nidānam* of dislocations and fractures.

CHAPTER XVI.

Now we shall discourse on the Nidánam of **Mukharogam** (diseases which affect the cavity of the mouth in general). 1.

General Classifications:—Sixty five* different forms of mouth disease are known in practice. They are found to attack seven different localities viz the lips, the gums of the teeth, tongue, palate, throat and the entire cavity ; of these eight are peculiar to the lips ; fifteen, to the roots of the teeth ; eight to the teeth ; five to the tongue , nine to the palate ; seventeen to the throat ; and three to the entire cavity 2—3.

Diseases of the lips:—The eight forms which affect the lips, are either Vátaja, Pittaja, Kaphaja, Sánnipátika, Raktaja, Mānsāja, Medaja or Abhīghátaja (Traumatic) 4.

The Vátaja Type:—The lips become dry, rough, numbed, black, extremely painful and the affected part seems as if it were smashed and pulled out or cracked by the action of the aggravated Váyu. In the **Pittaja type**—the lips become blue or yellow-coloured and studded with (a large number of small) mustard-seed-like eruptions, which suppurate and exude a purulent discharge attended with a burning sensation (in the 'locality'). In the **Kaphaja type**—the affected lips are covered with small eruptions, which are of the same colour as the surrounding part, and become slimy, heavy or thick, cold and swollen. Pain is absent in this type and the patient feels an irresistible inclination to scratch the parts. In the **Sánnipátaja type**, the lips change

* According to others sixty-seven—but Dailan does not support this.

colour, becoming black, yellow, or ash-coloured (white) at intervals and are found to be studded with various sorts of eruptions. 5—8

The Raktaja type:—(Produced by the vitiated condition of the blood) the affected lips look as red as blood and profusely bleed and crops of date coloured (chocolate coloured) eruptions appear on their surface. In the **Mānsaja type** (due to the vitiated condition of the local flesh), the lips become heavy, thick and gathered up in the form of a lump of flesh. The angles of the mouth become infested with parasites which germinate and spread themselves in the affected parts. In the **Medaja** (fat-originated) type the lips become numbed, soft, heavy and marked by an itching sensation. The skin of the inflamed surface becomes glossy and looks like the surface layer of clarified butter exuding a thin crystal-like (transparent) watery discharge. In the **Abhigātaja** (Traumatic) type, the lips become red, knotty and marked by an itching sensation and seem as if pierced into or cut open with an axe and (become cracked and fissured). 9—12.

Disease of the roots of the teeth:—

Diseases which are peculiar to the roots of the teeth, are known as **Śitāda**, **Danta-pupputaka**, **Danta-veshtaka**, **Śaushira**, **Māha-Śaushira**, **Paīdaia**, **Upakuśa**, **Danta-vaidarbha**, **Vaidhana**, **Adhimānsa** and the five sorts of **Nādi** (sinus). 13.

Śitāda (Scurvy);—The gums of the teeth suddenly bleed and become putrified, black, slimy and emit a fetid smell. They become soft and gradually slough off. The disease has its origin in the deranged condition of the local blood and **Kapham** **Danta-pupputaka** (gum boil);—The disease in which the roots of two or three teeth at a time is marked by a violent swelling and

pain is called **Danta-pupputaka**. The disease is due to the vitiated condition of the blood and Kapham. **Danta-veshtaka**:—The teeth become loose in the gums, which exude a discharge of blood and pus. This disease is due to the vitiated blood of the locality. **Śaushira**:—The disease in which an itching painful swelling appears about the gums attended with copious flow of saliva is called **Śaushira** (Alveolar abscess). It is caused by the deranged blood and Kapham of the locality. **Mahā-Śaushira**:—The disease in which the teeth become loose, the palate marked by sinuses or fissures, the gums putrified, and the whole cavity of the mouth inflamed, is called **Mahāśaushira**, the outcome of the concerted action of the deranged Doshas of the body. 14—18

Paridara:—The disease in which the gums become putrified, wear off and bleed is called **Paridara** (bleeding gums). The disease has its origin in the deranged condition of the blood, Kapham and Pittam. **Upakuśa**:—The disease in which the gums become marked by a burning sensation and suppuration and the teeth become loose and shaky (in their gums) in consequence and bleed at the least shaking, is called **Upakuśa**. There is a slight pain, and the entire cavity of the mouth becomes swollen and emits a fetid smell; this disease is due to the vitiated condition of the blood and Pittam 19.

Danta-Vaidarbha:—The disease which is consequent upon the friction of the gums marked by the appearance of a violent swelling about the portion (so rubbed and in which) the teeth become loose and can be moved about, is called **Danta-vaidarbha** which is due to an extraneous cause such as a blow etc. **Vardhana**:—the disease which is marked by the advent of an additional tooth (the last molar) through the action.

of the deranged Vāyu with a specific excruciating pain of its own, is called Vardhana or eruption of the Wisdom tooth. The pain subsides with the cutting of the tooth. **Adhimānsa**.—The disease in which a violent and extremely painful tumour appears about the root of the tooth, and is situated in the farthest end of the cavity of the cheek-bone accompanied by a copious flow of saliva is called Adhimānsa or Epulis. It is due to the deranged Kapham. The five sorts of Nādi (sinus) which affect the roots of the teeth (are either Vátaja, Pittaja, Kaphaja, Sānnipátaja or Abhigñātaja), their symptoms being respectively identical with those of the types of Nādi-vrana. 20—24.

Diseases to the teeth proper:—Diseases which are restricted to the teeth proper are named as, Dālana, Krimi-dantaka, Danta-harsha, Bhanjaka, Śarkarā, Kapālika, Śyāva-dantaka and Hanu-moksha 25

Dālana:—The disease in which the teeth seem as if being cleft asunder with a violent pain is called Dālana or toothache, the origin of which is ascribed to the action of the aggravated state of the bodily Vāyu. **Krimi-dantaka**—The disease in which the teeth are eaten into by worms, is called Krimi-dantaka (caries). The teeth become loose and perforated by black holes accompanied by a copious flow of saliva. The appearance of an extremely diffused swelling (about the roots of decayed teeth) with a sudden aggravation of the accompanying pain without any apparent cause is also one of its specific features. **Danta-harsha**:—The disease in which the teeth cannot bear the heat, cold or touch is called Danta-harsha. It is due to the deranged condition of Vāyu. **Bhanjaka**.—The disease in which the face is distorted, the teeth break, and the accompanying pain is severe, is called Bhanjaka (degeneration of the

teeth). The disease is due to the deranged condition of the Váyu and Kapham. **Sarkarā** —The disease, in which sordes, formed on the teeth and hardened (by the action of the deranged Váyu), lie in a crystallised form at the roots of the teeth, is called **Sarkarā** (Tartar). Such deposits tend to destroy the healthy growth and functions of the teeth. **Kapalikā** —The disease in which the preceding crystallised deposits get cemented together and afterwards separate from the teeth taking away a part of their coating (enamel) is called **Kapalikā** (calcareous deposit) which naturally makes an erosion into and destroys the teeth. **Syáva-dantaka** —The disease, in which the teeth variously scorched by the action of the deranged Pittam assumes a blackish or blue colour, is named as **Syáva-dantaka** (black teeth). **Hanu-moksha** —The disease in which the Váyu aggravated (by such causes, as by loud talking, chewing of hard substances, or immoderate yawning) produces the dislocation of the jawbones is called **Hanu-moksha**. It is identical with **Ardditam** as regards its symptoms 26 - 33

Diseases of the tongue :—The five kinds of diseases which affect the organ of taste are the three sorts of **Kantakas** due to the three deranged Doshas (**Vátaja**, **Pittaja** and **Kaphaja**), **Alása** and **Upa-jihvikā**. 34

The three Kantaks :—In the **Vátaja Kantaka** type the tongue becomes cracked, loses the sense of taste and becomes rough like a teak leaf (giving the organ a warty appearance). In the **Pittaja Kantaka** form the tongue is coloured yellow and studded over with furred blood-coloured papillæ with the burning sensation (of the Pittam in them). In the **Kaphaja Kantaka** type the tongue becomes heavy, thick and grown over with vegetation of slender fleshy warts in the

shape of *S'almali* thorns **Alása** —The severe inflammatory swelling about the under surface of the tongue is called **Alása**, which if allowed to grow on unchecked gives rise to numbness and immobility of the organ and tends to a process of rapid suppuration at its base. The disease is caused by the deranged blood and Kapham. The **Upa-jihvā** —The disease in which a (cystic) swelling shaped like the tip of the tongue appears about the under-surface of that organ by raising it a little is called **Upa-jihvikā** (*Ranula*). The accompanying symptoms are salivation, burning and itching sensations in the affected organ, these are due to the deranged Kapham and blood (of the locality). 35—37

Disease of the palate :—Diseases which are peculiar to the part of the palate are named **Gala-śundikā**, **Tundikeri**, **Adhruṣha**, **Māṁsa-kachchapa**, **Aṁvuda**, **Māṁsa-saṅghāta**, **Tālu-śoṣha** and **Tālu-pāka** 38.

Gala-śundikā :—The diffused and elongated swelling, caused by the deranged blood and Kapham, which first appears about the root of the palate and goes on extending till it looks like an inflated skin-bladder is called **Gala-śundikā** (tonsilitis) by physicians. Thirst, cough, difficult breathing are the indications of the disease. **Tundikeri** —A thick swelling resembling the fruit of the *Tundikeri* plant in shape and appearing about the root of the palate attended with a burning, piercing or pricking pain and suppuration is called **Tundikeri** (abscess of the tonsil). **Adhruṣha** :—A red, numbed swelling appearing about the same region, as the effect of the vitiated blood of the locality, attended with severe fever and pain, is known by the name of **Adhruṣha**. **Māṁsa-kachchapa** :—A brownish and slightly painful swelling somewhat shaped like the back of a tortoise (and appearing about the region of the soft

palate) is called *Mānsa-kachchhapa*. The disease is slow in its growth or development and is due to the deranged *Kapham*. *Arvuda*.—A swelling shaped like the petal of the lotus lily and appearing in the region of the soft palate as an outcome of the aggravated condition of the local blood is called *Arvudam*. The swelling is identical with the *Raktārveda* described before. *Mānsa-Sanghāta*.—A vegetation of morbid flesh at the edge or extremity of the soft palate through the action of the deranged *Kapham* is called *Mānsa-Sanghāta*. It is painless. *Tālu-puṣṭa*.—A painless permanent swelling to the shape of the *Kōla* fruit (plum) caused by the deranged fat and *Kapham* at the region of the soft palate is called *Tālu-puṣṭa*. *Tālu-śoṣa*.—The disease of the soft palate in which the patient feels a sort of parched sensation with dyspnoea and a severe piercing pain in the affected part is called *Tālu-śoṣa*, which has its origin in the aggravated condition of the bodily *Vāyu* acting in concert with the deranged *Pittam*. *Tālu-pāka*.—The disease in which the deranged *Pittam* sets up a very severe suppurative process in the soft palate is called *Tālu-pāka*. 39-47.

The diseases of the throat and larynx.—The diseases peculiar to the throat and the larynx are seventeen in number and are known as the five types of *Rohini*, *Kantha-Śāluka*, *Adhijihva*, *Valaya*, *Valāsa*, *Eka-vrinda*, *Vrinda*, *Śataghni*, *Gilāyu*, *Gala-vīradhi*, *Galaugha*, *Svaraghna*, *Mānsatāna*, and *Vidāri*. 48

General features of Rohinis.—The aggravated *Vāyu*, *Pittam*, *Kapham*, either severally or in combination, or blood may affect the mucous of the throat and give rise to vegetations of fleshy papillæ,

which gradually obstruct the channel of the throat and bring on death. The disease is called Rohini (Diphtheria) 49

The Vátaja Rohini:—A vegetation of extremely painful fleshy Ankuras (nodules), crops up all over the tongue which tend to obstruct the passage of the throat and are usually accompanied by other distressing symptoms characteristic of the deranged Váyu. **Pittaja-Rohini**—The Ankuras (nodules) in the present type are marked by speedy growth and suppuration, and are accompanied by a burning sensation and high fever. **Kaphaja Rohini**—The Ankuras (nodules) become heavy, hard and characterised by slow suppuration gradually obstructing the passage of the throat. 50-52.

The Sannipátika Type:—Suppuration takes place in the deeper strata of the membrane accompanied by all the dangerous symptoms peculiar to the three aforesaid types of the disease. It is rarely amenable to treatment. **Raktaja Type**—Symptoms characteristic of the Pittaja type of the disease are present and the fleshy outgrowth formed in the throat, is found to be covered with small vesicles. This type is incurable* 53-54

Kantha-Sálukam:—The disease in which a hard rough nodular growth (Granthi) in the shape of a plum-stone crops up in the throat, which seems as if it has been stuffed with the bristle of a *S'uka* insect or been pricked by thorns is called Kantha-Sálukam. The disease is due to the action of the deranged Kapham. It is amenable to surgical treatment only. **Adhijihva**—A small swelling like the tip of the tongue caused by the

* The reading Sádhyā (curable) which is to be met with in the several printed editions of Mádhab's Nidánam in lieu of the reading Asádhyā (incurable) is not to our mind correct.

deranged blood and Kapham over the root of the tongue is called Adhihiva, which should be given up as soon as suppuration sets in. **Valaya** :—A circular or ring-shaped raised swelling obstructing or closing up the upper end of the œsophagus (structure of œsophagus) is called Valaya. It cannot be cured and hence should be given up. It is due to the deranged action of the Kapham in the locality. **Valása** :—The disease in which the unusually aggravated Váyu and Kapham give rise to a swelling in the throat, which is extremely painful and causes a difficulty of respiration, ultimately producing symptoms of complete asphyxia is called Valása by learned physicians and is very difficult to cure. 55—58.

Eka-vrinda and Vrinda*:—The disease in which a circular, raised, heavy and slightly soft swelling appears in the throat attended with itching, a slightly burning sensation and a slight suppuration is called **Eka-vrinda**. The disease is due to the effect of vitiated blood and Kapham. The disease in which a round elevated swelling attended with high fever and a slightly burning sensation is formed in the throat through the aggravated condition of the blood and Pittam is called **Vrinda**. A piercing pain in the swelling points to its Vátaja origin. 59—60.

Śataghni:—The disease in which, through the concerted action of the deranged Váyu, Pittam and Kapham, a hard throat obstructing Varti (jagged membrane, edged like a Śataghni† and densely beset with fleshy excrescences is formed along the inner lining of

* The diseases of the throat are 17 in number. Taking Vrinda as a separate disease they amount to 18; but Vrinda, affecting similar place and being similar in appearance with but a slight distinction of symptoms, is only a particular state of Eka-vrinda, and not a separate disease.

† Śataghni is a kind of weapon used in ancient warfare,

that pipe is denominated as Śataghni. Various kinds of pains, (characteristics of each of the deranged Vāyu, Pittam and Kapham) are present in this type which should be necessarily considered as irremediable 61

Gilāyu :—The disease in which the aggravated Kapham and blood give rise to a hard and slightly painful (D. R. extremely painful) glandular swelling in the throat to the size of the stone of the *Āmalaka* fruit is called Gilāyu. A sensation as if a morsel or bolus of food is stuck in the throat is experienced which by its very nature is a surgical case 62.

Gala-vidradhi :—The disease in which an extensive swelling occurs along the whole inner lining of the throat, owing to the concerted action of the deranged Vāyu, Pittam and Kapham is called Gala-vidradhi which exhibits all the features present in a Vidradhi of the Sānīpātika type. **Galaugha** —The disease in which a large swelling occurs in the throat so as to completely obstruct the passage of any solid or liquid food and also that of Udāna-vāyu (choking the pharynx, larynx and the mouth of the esophagus), attended with a high fever is called Galaugha, the origin of which should be ascribed to the action of the deranged blood and Kapham. **Svaraghna** —The disease in which the patient faints owing to the choking of the larynx by the deranged Kapham which is marked by stertorous breathing, hoarseness, dryness and paralysed condition of the throat is called Svaraghna which has its origin in the deranged Vāyu 63—65

Mānsatāna :—The disease in which a pendent, spreading and extremely painful swelling appears in the throat which gradually obstructs the pipe is called Mānsatāna. It invariably proves fatal and is caused by the deranged Vāyu, Pittam and Kapham 66

Vidāri :—The disease in which a copper-coloured swelling occurs in the throat, marked by a pricking and burning sensation, and the flesh of the throat gets putrefied and sloughs off (and emits a fetid smell) is called Vidāri. The disease is of a Pittaja origin and is found to attack that side of the throat on which the patient is in the habit of lying. 67

The disease in the entire cavity :—
Cases which are found to invade the entire cavity of the mouth (without being restricted to any particular part thereof) may be either due to Vātaja, Pittaja, Kaphaja or Raktaja type and are known by the general name—*Savra-Sara* 68.

In the Vātaja type the entire cavity of the mouth is studded with vesicles attended with a pricking sensation in their inside. In the Pittaja type a large number of small yellow or red-coloured vesicles attended with a burning sensation crops up on the entire (mucous membrane lining the cavity of the mouth. In the Kaphaja variety a similar crop of slightly painful, itching vesicles of the same colour as the skin (is found on the entire inner surface of the mouth) The blood-originated Raktaja type is nothing but a modification of the Pittaja one (giving rise to similar symptoms); it is also by others called *Mukha-pāka*. 69-72

Thus ends the sixteenth Chapter of the Nidāna Sthānam in the *Sus'ruta Samhitā* which treats of the Nidānam of the diseases of the mouth.

Here ends the Nidāna Sthānam.

THE
SUSŪRUTA SAMHITA
ŚĀRIRA STHĀNAM.

(SECTION ON ANATOMY).

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CHAPTER I.

Now we shall discourse on the Śārīram which treats of the science of Being in general (**Sarva-Bhuta Chintā Śārīram**). 1.

The latent (lit unmanifest) supreme nature (*Prakriti*) is the progenitor of all created things. She is self-begotten and connotes the three fundamental or primary virtues of *Sattva*, *Rajas* and *Tamas*. She is imaged or embodied in the eightfold categories of *Avyakta* (unmanifest), *Mahān* (intellection), *Ahamkāra* (*Egoism*) and the five *Tanmātras* or elementals (proper sensibles) and is the sole and primary factor in working out the evolution of the universe. The one absolute and original nature is the fundamental stone house of materials out of which the bodies of all self-conscious (*Karma-Purusha*) working agents (agents who come into being through the dynamical energy of their acts or *Karmas*) have been evolved in the same manner as all water, whether confined in a tank or a reservoir, or coursing free through the channels of streams and of mighty rivers, have been welled up from the one and shoreless primordial ocean. 2.

Out of that latent unmanifest (*Avyakta*) or original nature (impregnated by the atoms or elemental units of

consciousness of Purushas) Intellection of Mahán has been evolved, and out of Mahán egoism This Mahán of intellection should be likewise considered as partaking of the three fundamental attributes (Sattva, Rajas, and Tamas) of the latent (Avyakta) or original nature.* Ahamkára or egoism in its turn may be grouped under three subheads as the Vaikárika Taijasa (operative) or Rájásika, and Bhutádi (illusive or Tāmasika) 3.

The eleven organs of cognition, communication or sense perception have emanated from the co-operation of the aforesaid Vaikárika Ahamkára with the Taijasa or Rajasa They are the ears, skin, eyes, tongue, nose, speech, hands, genitals, anus, feet and the mind (Manah). Of these foregoing organs the first five are intellectual or sense organs (Vuddhi Indriya), the next five being operative (Karma-Indriya) The mind (Manah) partakes of the character of both the intellectual and operative organs alike. 4-5.

The five Tanmátras or elementals (or the five proper sensibles of hearing, touch, sight, taste, and smell) characterised by the Nescience, etc. have been evolved out of the Bhutádi etc (or Tāmasa Ahamkára) concerted with the Taijasa Ahamkára through the instrumentality of the Vaikárikam. The gross or perceptible modifications of these five Tanmátras are sound, touch, taste, sight and smell From the combination of the aforesaid five Tanmátras (Bhutádi) taken one at a time, have successively emanated the five gross matters of space such as

* Sattva, Rajas and Tamas —Adhesion, cohesion and disintegration in the Physical plane, affection, love and hate in the moral; emancipation, spiritual affinity and sin in the Psychic.

Simply phenomenal or the simple outcome of the phenomenal evolution without being by other specific attributes of matter and hence Sāttvika or illuminating or quasi-spiritual.

ether, air, heat, (fire,) fluid (water), and earth (solid). These twenty four categories combinedly form what is technically known as the twenty four elements (Tattvas) Thus we have discoursed on the twenty four fundamental principles (Chaturvīṣṭi-tattvam). 6.

Hearing, touch, sight, taste and smell respectively form the subjects of the five intellectual (Vuddhi) organs of man, whereas the faculty of speech, handling, pleasure, ejections or evacuation, locomotion successively belong to the (remaining) five operative (Karma-Indriya) ones. The original nature (Aiyakta), Mahán* (intellection), Egoism (Ahamkára), the five sensibles (Tanmátras), and the five gross material principles in their nascent stage in evolution form what is included within the eight categories of Nature (Prakṛiti), the remaining sixteen categories being her modifications (Vikára). The objects of intellection (Mahán) and Egoism (Ahamkára) as well as of the sense organs of knowledge and actions are the material principles (Ādibhautika) though they are spiritual in themselves and in their nature.

The tutelary god of intellection (Buddhi) is Brahmá. The god Íśvara is the presiding deity of the sense of egoism (Ahamkára), the moon god is that of the mind (Manah), the quarters of the heaven, of the ears, the wind god is that of the skin; the sun is that of the eyes; the water is that of the taste, the earth is that of the smell; the fire is that of the speech, Indra is that of the hands, Vishnu is that of the legs; Mitra is that of the anus and Prajapati is that of the organs of generations 7.

* Mahán, Ahamkára and the five Tanmátras, though but modifications of the original Nature in themselves, have been included within the category of Nature (Prakṛiti) inasmuch as they form the immediately prior or antecedent conditions of the evolution of the phenomenal universe.

All the aforesaid (twenty-four) categories or elementals (Chaturvīṣāti-Tanmātras) are devoid of consciousness. Similarly the modifications of the primal cause of Prakriti such as the Mahat etc. are all bereft of consciousness in as much as the cause itself, the Avyakta or the original nature is devoid of it. The Purusha or the self-conscious subjectivity, enters into the primal cause (Mula-Prakriti or original Nature) and its necessary effect (the evolved out phenomena) and makes them endued with his own essence or self-consciousness. The preceptors and holy sages explain the proposition by an analogy that as the milk in the breast of a mother, though unconscious in itself, originates and flows out for the growth and sustenance of her child ; (as the semen in the organism of an adult male though devoid of consciousness, flows out during an act of sexual intercourse) ; so these twenty-four primary material principles (elementals), though unconscious in themselves, tend to contribute towards the making of the self-conscious self or the universal individual (the aggregate of limited or conditional selves) for the purpose of working out his final liberation or emancipation *i.e.*, attainment of the stage of pure consciousness or perfect knowledge 8.

Now we shall describe the tracts which the Purusha (subjective or self-conscious reality) and Prakriti or nature (passive non-conscious eternity) pass in common as well as those wherein they differ from each other. 9.

Traits of commonalty :—Both the Purusha and Prakriti are eternal realities, both of them are unmanifest, disembodied, without a beginning or origin, eternal, without a second, all—pervading and omnipresent

Traits of diversity :—Of the Purusha and the Prakriti, only the latter is non-conscious and possesses the three fundamental qualities of Sattva, Rajas and Tamas. Prakriti performs the function of the seed or in other words she lies inherent as the seed or the primary cause in the latter phenomenal evolution of the Mahat etc and contributes the maternal element in the conception, development and birth of the primordial cosmic matter (phenomenal universe), fecundated by the Purusha (self-conscious subjectivity) in its different stages of evolution. These stages are called Mahat, Ahankāra etc ; and Prakriti is not indifferent, as the Purusha is to the pleasures and misery of life. But the Purusha (units or atoms of consciousness), devoid of the threefold virtues of Sattva etc. are non-concerning hence non-producing and bereft of the seed-attributes of lying inherent in all as the primary cause of evolution. They are mere witnesses to the joys and miseries of life, and do not participate in their enjoyment though imprisoned in the human organism. 10

Since an effect is uniform in virtue to its producing cause, the evolutionised effects or products of the Prakriti such as the Mahat, Ahankāra etc. must needs partake of the three fundamental qualities (Sattva, Rajas and Tamas) which are predicated of the Prakriti. In other words, these Mahat, Ahankāra, etc, are but the modifications of the three fundamental qualities of Sattva, Rajas and Tamas. Moreover, certain authorities hold that the Purushas are units of self-consciousness, possessed of the three aforesaid qualities owing to their antecedent conditions or causes (the gross material universe) being permeated with and characterised by them. 11.

Metrical Text (Vaidyake) :—It is asserted in the *Āyurveda* that it is only the gross-sighted ones and men capable of observing only the superficial appearances, who confound eternal order or sequence of things and events (*Śvabhāva*), God (*Īśvara*),* Time (*Kāla*), sudden and unlooked for appearances of the phenomena (*Yadrichchhā*), Necessity (*Niyati*) and transformation (*Parināma*) with the original Nature (*Piākṛiti*). The five different forms of matter (such as Ether etc) are nothing but the modifications or transformed states of the original nature and are characterised by the three universal qualities of *Sattva*, *Rajas* and *Tamas*, and all created things, whether mobile or immobile, should be considered as alike exponented by the same. In the Science of medicine the cause of a disease is the one sole aim to be achieved by means of administering proper medicinal remedies (matter), and hence the properties of matter are the only fit subject to be dealt with in a book on pharmacy. And further, because the immediately prior cause of the human organism is a proper and congenial admixture of the sperm and ovum (matter), the sense organs are the resultants of phenomenal—evolution of matter, and the objects of sense perception are equally material or phenomenal in their nature 12—14

Memorable verse :—A man by a particular organ of his body perceives the same matter which forms the proper object of that sense organ in as much as the perceiving sense organ and the perceived sensible are produced by the same material cause. The matter,

* The second factor according to *Sāṅkhya*, in the order of cosmic evolution, which as the seed of the universe, was hid in the burning disc of the central, primordial Sun, out of which the different solar systems have come into being.

which specifically forms the object of a particular sense organ, cannot be perceived by the other. We see a flower with the eyes and not with the nose. 15.

The Science of medicine does not lay down that the self-conscious Selves (Kshetrajna) are all pervading, but on the contrary it asserts that they are real and eternal and are born in the planes of divine, human or animal existence according to their good or evil deeds in life. The existence of these self-conscious entities can be ascertained duly by inference inasmuch as they are extremely subtle in their essence. The self-conscious self is possessed of infinite consciousness, is real and eternally subject to the process of being evolved out into a finite, organic individual through the dynamics of the combined sperm and ovum. The view is further corroborated by a dictum of the Śruti which holds that Purusha (individual) is nothing but a combination of a self-conscious self and the five kinds of matter (Mahābhūtas) formed into an organic body. This Purusha or individual, which is called Individual of action (Karma-Purusha), falls within the scope of the science and art of medicine.* 16—17

* Here lies the difference between Sāṅkhya and Āyurveda. While the former discourses on the material character of the soul, the latter commences to discuss on the questions how the material environment in which the soul is said to inhabit is evolved, and how the inclusion of the spiritual within the material organism is effected.

Hence Suśruta's Physiology, like that of Charaka, is in the strictest sense of the word molecular and his science of life is an attempt at explanation of consciousness from the materialistic standpoint, which agrees with the views of modern western science. Intellect according to Suśruta is material and belongs to the same category which the Sāṅkhya system of philosophy in its explanation of evolution enumerates originally as seven. The soul, according to Suśruta, is an independent existence and is often associated with what is called life. Where there is life, there is a soul, and it is not everywhere the same. The soul in Suśruta is individual

The attributes of an organic individual :—Longing for pleasure, shunning of pain, enmity, energetic undertaking of work, respiration (Prána), emission of flatus (Apána), closing and opening of the eyelids, intellect (Vuddhi), sentiment (Manah), deliberation, discretion, memory, knowledge of art, perseverance, sensation and perception, are the attributes of an organic individual. 18

Distinctive features of the different classes of mental temperaments :—An absence of all killing or hostile propensities, a judicious regimen of diet, forbearance, truthfulness, piety, a belief in God, spiritual knowledge, intellect, a good retentive memory, comprehension, and the doing of good deeds irrespective of consequences, are the qualities which grace the mind of a person of a Sāttvika temperament. Feeling of much pain and misery, a roving spirit, non-comprehension, vanity, untruthfulness, nonelementary, pride, an over winning confidence in one's own excellence, lust, anger and hilarity are the attributes which mark a mind of the Rājashika cast. Despondency, stupidity, disbelief in the existence of God, impiety, stupification and perversity of intellect, lethargy in action and sleepiness are the qualities which mark a mind of a Tāmashika stamp. 19,

The distinctive traits of the five material Elements of the world :—The properties of Ākāśa (ether) are sound, the sense of hearing, porosity and differentiation evolution of the veins, ligaments etc. into their characterised species (Viviktaśā).

राशिज पुनः and takes cognisance of sorrow, disease and death by its union with the body (पर मृदाभूते शरीरे समवायः पुनः इत्युच्यते). Hence the living frame together with the soul that is said to inhabit it forms the subject-matter of Ayurvedic medical treatment. Ed.

The properties Vāyu (etherin) are touch, the skin, all functional activities of the organism, throbbing of the whole body (Spandana) and lightness. The properties of Teja (fire or heat) are form, the eyes, colours, heat, illumination, digestion, anger, generation of instantaneous energy and valour. The properties of Āpa (water or liquid) are taste, the tongue, fluidity, heaviness, coldness, oliginousness and semen. The properties or modifications of Prithivi (the earth matter or solid) are smell, the nose, embodiment and heaviness. 20.

Of these the ether or Akāśa abounds in attributes of the Sāttvika stamp, the Vāyu or etherin in Rājashika, the Teja in Sāttvika and Rājashika, the water in Sāttvika and Tāmashika and the earth in Tāmasha attributes. 21.

There are Memorable Verses :—These qualities are found to characterise and enter into the successive elements in the order of their enumeration. The specific attributes of these elements are manifest in the substances which are respectively originated from them. The term Prakṛiti or original nature connotes the eight categories (of Avyakta, Mahān, Ahamkāśa, and the five Tanmātras) and the rest of the twenty four fundamental principles are its modifications. The Puruṣa forms the twentyfifth principle. These twentyfive fundamental principles of cosmogony have been dealt with in the present treatise (Śālya-Tantram) as well as in the other treatise (Śālakya-Tantram and Sāṅkhya Philosophy). 22—23.

Thus ends the first Chapter of the S'ārira Sthānam in the Suśrūta Samhitā which deals with the science of Being in general.

CHAPTER II.

Now we shall discourse on the Śáritam which treats of the purification of semen and cataminal fluid etc (**Śukra-Śonita-Śuddhirnáma Śáriram**). 1.

A man is incapable of begetting children, whose seminal fluid, affected by the aggravated Váyu, Pittam or Kapham, emits a cadaverous smell, or has acquired a clotted or shreddy character or which looks like putrid pus, or has become thin, or smells like urine or stool. 2.

Deranged Semen :—Semen vitiated by the deranged Váyu acquires a (reddish-black) colour and gives rise to a pain (piercing and cutting etc) which characterises the Váyu (at the time of being emitted). Similarly semen deranged by the Pittam gets a (yellowish or bluish etc) colour and produces the specific pain (burning and sucking etc.) of the deranged Pittam (at the time of emission). Semen vitiated by the action of the deranged Kapham has a (white) colour and produces the pain (itching sensation etc) peculiar to the deranged Kapham (at the time of its outflow). The semen vitiated by blood is tinged with a bloody hue, produces all kinds of pain peculiar to the deranged Sonita (Pittam). The semen smells like a putrid corpse and is emitted in large quantities. The shreddy or clotted character of the fluid (**Granthila**) should be ascribed to the action of the deranged Váyu and Kapham. If vitiated by the action of the deranged Pittam and Kapham it looks like putrid pus (**Puti-puya**). Thin semen is caused by the deranged Váyu and

Pittam as described before. A concerted action of the deranged Vāyu, Pittam, and Kapham causes the semen to smell like urine or fecal matter. Of these, the cadaverously smelling, shreddy and clotted, putrid pus-like and thinned semen can be remedied and corrected only with the greatest difficulty; while the one, having the smell of stool or urine, should be regarded as beyond cure. The remaining kinds are curable 3

Deranged Ārtavam :—The catamenial fluid (Ārtavam) of a woman vitiated by the deranged Vāyu, Pittam, Kapham, or blood, either severally or in combination of two or more Doshas should be likewise considered as unfit for the purpose of fecundation. Vitiated catamenial fluid exhibits the characteristic colour and pain of the deranged Doshas or blood (underlying at its roots). Of the several kinds (of vitiated catamenial fluids) those which smell like a putrid corpse or fetid pus, or which is clotted, or is thin, or emits the smell of urine or fecal matter, should be deemed as being beyond remedy, the rest being amenable. 4.

Memorable Verses :—The first three types of seminal derangements or defects should be corrected by an intelligent physician with an application of medicated oil etc (Sneha-karma), diaphoretic measures etc* or urethral injections (Uttara-vasti). A medicated Ghrita prepared with a (decoction and Kalka of) *Dhātaki* flowers, *Khadira*, *Dādima* and *Arguna* barks should be given to drink to a man whose semen emits a cadaverous smell (Kunapa). As an alternative, a medicated Ghrita prepared with (a decoction and levigated paste or Kalka of) the drugs forming the *S'ālasāśādi* group should be given to him. In a case of

* The word "Ādi" in the text includes emetics, purgatives, Anuvāsanam and Āsthāpanam measures according to their specific Doshas

clotted and shreddy semen (Granthi), the patient should be made to drink a medicated Ghrita prepared with a (decoction and Kalka of) *S'athu*, or with an alkaline solution prepared from the ashes of the burnt *Palās'ha* wood. In the case of a pus like appearance of the fluid the patient should be treated with the medicated Ghrita prepared with (a decoction and Kalka of) the drugs included within the groups of *Parushakādi* and *Vatādi* (Nyāgirodhādi) Ganas. In a case of thin semen, measures laid down under the same head before, as well as those to be hereafter described should be resorted to. Similarly a medicated Ghrita, prepared with (a decoction and Kalka of) *Chitrakk* roots, *Ushna* roots and Hingu, should be drunk in a case of the semen smelling like urine or fecal matter. In all cases of seminal disorders as well as in menstrual anomalies, Uttara-Vasti (urethral or vaginal injection) should be made after having recourse to the application of medicated oil etc. (Sneha-karma, purgatives, emetics, Āsthāpāna and Anuvāsana measures. 5—12

Treatment of deranged Ārtava:—In all the four cases when the catamenial blood would be found to be vitiated (by the deranged Vāyu, Pittam, Kapha or Śonita), the preliminary remedial measures of the application of oil etc. purgatives etc (Pancha-karma) should be first employed and then the following measures should be undertaken *viz* application of **Kalka**, (levigated paste of drugs), **Pichu** (medicated plugs—pacharies etc), **Pathya** (diet) and **Āhamāna** (washes with decoctions) as described under the treatment of Gynecological cases etc. Appearance of clots of blood (Granthi) in place of the healthy menstrual fluid would indicate, decoction or a pulverised compound of Pāthā, Trushuna and Viikshaka (Kutaja).

A decoction of *Bhadras'riyam** and *Chandanam* is indicated in the case when the menstrual fluid would smell like fetid pus, or contain mallow. The remedies described under the head of seminal disorders, should be likewise prescribed in cases of menstrual anomalies caused by the action of the deranged Vāyu, Pittam and Kaphah according to the requirements of each individual case under treatment. Śali-rice, barley, wine and meat with cholagogue properties should be deemed as a wholesome diet in these cases. 13—16.

Traits of pure and healthy semen and menstrual blood :—Semen which is transparent like crystal, fluid, glossy, sweet and emits the smell of honey, or like oil or honey in appearance according to others, should be considered as healthy. The catamenial blood (Ārtava) which is red like the blood of a hare, or the washings of shellac and leaves no stains on cloths (which may be washed off by simply soaking them in water) should be considered as healthy. 17—18

Asrigdara (Menorrhagia) — An abnormal or excessive discharge of the menstrual blood (Ārtava), or its long persistence even after the wonted time, or its appearance at a premature or unnatural period (as well as contrariety in its colour or properties) is called **Asrigdara**. All types of the disease (*Asrigdara*) are attended with an aching in the limbs and a painful flow (of the catamenial fluid). In case of excessive hæmorrhage (from the uterus), symptoms such as weakness, vertigo, loss of consciousness, darkness of vision, or difficult breathing, thirst, burning (sensation of the body), delirium, palour, somnolence and other Vātaja

* *Bhadras'riyam* is *S'richandanam* according to Dallana or white Sandal wood according to Gayādāsa.

troubles (convulsion, hysteria etc) may set in. A physician should treat a case of *Asūgdara* with measures and remedies as laid down under the head of **Rakta-pittam** (hæmorrhage) in a case when the patient is young (of sixteen years), careful in her diet, and the disease unattended with severe complications. 19—21

Amenorrhœ:—In a case of suppression of menstruation (**Amenorrhœ**) caused by the obstruction of the deranged *Doshas* (*Vāyu* and *Kapham*) in the passage, the patient should be advised to take fish, *Kulaththa* pulse, *Māsha* pulse, *Kānyakam* (fermented sour gourd etc), *Tila*, wine (*Suiā*), cow's urine, whey, half diluted *Takra*, curd and *Sūktam* for her diet. The symptoms and treatment of thin and scanty menstruation have been described before. Still in such a case measures laid down for the treatment of **Nashta-Rakta** (amenorrhœ) may be adopted. Under a course of treatment described as before, the semen or the catamenial blood of a person would be resorted to their healthy and normal condition. 22—23.

A woman with (healthy) catamenial flow should forego the bed of her husband during the first three days of her uncleanness, as well as day sleep and collyrium. She shall not shed tears nor bathe, nor smear her person (with sandal paste etc.), nor anoint her body, nor paint her nail, nor run, nor indulge in loud and excessive laughter and talk, nor should she hear loud noise, nor comb her hair, nor expose herself to thoughts, nor do any fatiguing work at all, because if a woman sleeps in the day time (during the first three days of her period) her child of subsequent conception becomes sleepy or somnolent. The woman who applies collyrium along her eyelids (during those days), gives

birth to a blind child ; by shedding tears (during her period) a woman gives birth to a child of defective eyesight , by bathing or smearing her body (with sandal paste etc) a miserable one , by anointing her body a leper (Kushthi) , by paring her nails a child with bad nails , by running a restless one , by indulging in excessive laughter, a child with brown (Syāva) teeth or palate or tongue , by excessive talking a garrulous child or one of incoherent speech , by hearing loud sounds, a deaf child ; by combing her hair, a bald one ; whereas by exposure to the wind or by doing fatiguing work (during the first three days of her period) she gives birth to an insane child (conceived immediately after it) Hence these acts (day sleep etc) are to be avoided 24.

Regimen to be observed in her menses :—A woman in her menses should lie down on a mattress made of *Kus'a* blades (during the first three days of her uncleanness), should take her food from her own blended palms or from earthen saucers, or from trays made of leaves She should live on a course of Habishya diet and fairsweat during the time, even the sight of her husband After this period, on the fourth day she should take a ceremonial ablution, put on a new (untorn) garment and ornaments and then visit her husband after having uttered the words of necessary benediction 25.

Metrical Text :—A child conceived after the period resembles the man whom she first sees after ablution on the fourth day of her menses , hence she should see none but her husband* at that time (so that the child may resemble his father). After that the priest shall perform the rites (Gaibhādhāna ceremony),

* In the case of the husband being absent at the time, she should look at the sun.

to help the conception of a male child and after the ceremony a wise husband should observe the following rules of conduct. 26—27.

Conduct of Husband :—A husband wishing to beget a son by his wife, should not visit her bed for a month (before the day of the next flow) Then on the fourth day of her uncleanness, he should anoint or lubricate his body with Ghrita, should partake of a food in the afternoon or evening composed of boiled *S'dli* rice, milk and clarified butter, and then visit the bed of his wife. The wife also, in her turn, should observe a similar vow of sexual abstinence (*Brahma-chārīni*) for a month before that day on which she should anoint or lubricate her body with oil, partake of food largely composed of oil and *Māsha* pulse, and then meet her husband at night. The husband then having uttered the appropriate Veda Mantras and having awakened confidence in the wife, should go unto her on the fourth, sixth, eighth, tenth or on the twelfth night of her menses for the procreation of a male child. 28

Metrical Text :—A visit to the wife on any of these nights leads to the continual increase of the wealth, progeny, and the duration of the husband's life. On the other hand, a visit to one's wife on the fifth, seventh, ninth, or eleventh day of her flow leads to the conception of a female child. The thirteenth and the remaining days (till the next course) are condemned as regards intercourse. 29—30

Prohibited Period etc. :—A going unto one's wife on the first day of her monthly course tends to shorten one's life and a child born of the act dies immediately after its delivery. The same result is produced by a visit on the second day, or the child dies lying-in soon *i.e.* ten days of its birth; A visit on the third day

leads to the child's being deformed and short-lived. A child which is the fruit of a visit on the fourth day lives long, will be well developed and remain in the full vigour of health. The semen cast in the womb of a woman during the continuance of her monthly flow does not become fruitful because it is carried back and flows out in the same manner as a thing thrown into a stream does not go against but is carried away with the current. Hence a husband should foreswear the company of his wife during the first three days of her uncleanness, when she also should observe a vow of sexual abstinence; the husband should not visit his wife within the month 'after the twelfth day of her menses'. 31.

After the impregnation on any of these nights, three or four drops (of the expressed juice) of any of the following drugs such as *Lakshand*, *Vata-S'unga*, *S'ahadevā* or *Vis'vadevā*, mixed with milk should be poured into the right nostril of the enceinte for the conception of a male child and care should be taken that she does not spit it away. 32.

Metrical Text:—A co-ordination of the four factors of menstrual period (*Ritu*), healthy womb (*Kshetra*), nutrient liquid *i.e.* chyle of digested food (*Ambu*), healthy semen (*Vija*) and the proper observance of the rules is necessary for the conception and development of a healthy child just as the proper season (*Ritu*), good soil (*Kshetra*), water (containing nutrient matter) and vigorous seeds (*Vija*) together with proper care, help the germination of strong and undiseased sprouts. A child which is the fruit of such conception is destined to be beautiful, of vigorous health, generous, long-lived, virtuous, attached to the good of its parents and capable of discharging its parental obligations 33

Causes of different colours of the Child:—The fiery principle (Teja-dhātu) of the organism, which is the originator of all colours of the skin (complexion), happening to mix largely with the watery principle of the body at the time of conception, serves to make the child a fair complexioned one (Gaura-vaina), mixed with a large quantity of the earth principle (Kshuti) of the body, it makes the child a dark complexioned one (Krishna-vaina). In combination with a large quantity of earth and ethereal principles of the organism, it imparts a dusky (Krishna-syāma) complexion (to the full developed foetus). A similar combination of watery and ethereal principles serves to make the child dusky yellow (Gaura-syāma). Others on the contrary aver that the complexion of the child is determined by the colours of the food taken by its mother during the period of gestation. 34.

A child is born blind in the failure of the fiery principle (Teja-dhātu) of the organism in reaching the region of its still undeveloped eyes (part—where the eyes would be); so also a penetration by the same (Teja-dhātu) into its blood accounts for the blood-shot eyes of the child. Entered into the Pittam it makes the child a yellow-pupiled one (Pingalāksha). Entered into its bodily Kapham it makes it a white-eyed body and mixed with its bodily Vāyu, a child of defective eyesight 35.

Memorable verses:—As a lump of condensed clarified butter melts and expands if placed by the side of a fire, so the ovum (Ārtava) of a woman is dislodged and glides away in contact with an adult male*.

* Sus'ruta's theory is that ovulation occurs about the same time as menstruation and rather initiates the latter, and the shed ova are washed out with the menstrual flow, hence there is a possibility of conception on

A seed divided into two by the dejected Vāyu within the (cavity of the) uterus (Kukshi) gives rise to the birth of **twins**, conditioned by the good or evil deeds of their prior existence. A child born of scanty paternal sperm becomes an **Āsekya** and feels no sexual desire (erection) without previously (sucking the genitals and) drinking the semen of another man. A child begotten in a sordid vagina is called a **Sougandhika**, whose organ does not respond to the sexual desire without smelling the genitals of others. The man who first becomes a passive member of an act of sodomy and then again commits sodomy with the woman (he visits) is called a **Kumbhika** (or Guda-yoni and is included within the category of a **Kliṣa**) 36—40.

The man who cannot copulate with a woman without previously seeing the sexual intercourse of another couple is called **Irshaka**. A child born of an act of fecundation foolishly or ignorantly effected during the menses of its mother by its progenitor by holding her on his bosom during the act is called a **Shanda** and invariably exhibits effeminate traits in his character. A daughter born of a woman riding on her husband during the act of sexual intercourse will develop masculine traits in her character 41—43.

connexion during the period of flow. But when the menstruation stops of itself by the end of the third day, it also indicates that ovulation has ceased and no ovum is left to be fertilized, hence the question arises how can there be conception then on connexion on the fourth day and thereafter? The explanation (as in the following verse) is that the ovulating organ though quiescent at the time is again stimulated to activity by intercourse with a male and new ova are shed which are ready to be fertilized by the semen.—Ed.

* Gayi interprets the term "Dharmetara" to mean evil deeds (other than good) and quotes verses from *S'rutis*, *S'mritis* and *Tantras* on expiations of sin in support of his view.

Semen is developed in the four types of Kliva known as Āsekya, Sougandhika, Kumbhika and Iishaka, whereas a Shanda is devoid of that fluid (Śukra). The semen carrying ducts of an Āsekya etc are expanded by the drinking of the semen as above described which helps the erection of his reproductive organ. 44-45

The conduct and character of a child and its inclination to particular dietary are determined by those of its parents during the act of fecundation. A boneless (*i. e.* with cartilaginous bones) monstrosity is the outcome of the sexual act in which both the parties are female and then Śukra (sexual secretion) unite somehow or other in the womb of one of them. Fecundation may take place in the womb of a woman, dreaming of sexual intercourse in the night of her menstrual ablution. The local Vāyu carries the dislodged ovum into the uterus and exhibits symptoms of pregnancy, which develop month after month till the full period of gestation. The offspring of such a conception is a Kalala (a thin boneless jelly-like mass) on account of the absence of the paternal elements* in its development. Such monstrosities as serpents, scorpions, or gourd shaped foetus delivered from the womb of a woman should be ascribed as the effects of deadly sins. 46-49.

The child of a mother whose wishes are not honoured and gratified during pregnancy stands in danger of being born palmless, hunchbacked, lame, dumb or nasal voiced through the deranged condition of the Vāyu of its mother's body. The malformation of a child in the womb should be ascribed to the atheism of its parents, or to the effects of their misdeeds in a prior existence, or

* Hair, beard, nails, teeth, arteries, veins, ligaments and semen are called paternal elements inasmuch as these are said to be inherited by the child from its father.

to the aggravated condition of the Vāyu, Pittam and Kapham. 50—51

A foetus in uterus does not excrete fæces or urine, owing to the scantiness of the fecal matter, etc., in its intestines and also to the obstruction and consequently lessened admission of the Vāyu into its lower bowels. A child in the womb does not cry inasmuch as its mouth remains covered with the sheath of the *placenta* *i.e.* *fœtal membranes* (Yarāu) and its throat is stuffed with Kapham. The processes of respiration, sleeping and movement of the foetus in the womb are effected through those of its mother. 52—53

The adjustment of the different limbs and organs of the body of a child in the womb at their proper places, the non-development of hair on its palms and soles and the subsequent cutting and falling off of its teeth are spontaneously effected according to the laws of nature after the model of its own species. An honest, pious, erudite man, who has acquired a vast knowledge of the Śāstras in his prior existence, becomes largely possessed of mental traits of the Sāttvika stamp in this life too and also remembers his prior births (Jātismara). Acts similar to those, which a man performs in a prior existence, overtake him also in the next. Similarly the traits and the temperament which he had developed in a previous existence are likewise sure to be patent in the next. 54—55.

Thus ends the second Chapter of the Śārira Sthānam in the Susruta Samhitā which treats of the purification of sperm and ovum

CHAPTER III.

Now we shall discourse on the Śāṁam which treats of pregnancy, etc (**Garbhā Vakraṁti Śārīram**).¹

The male reproductive element (Śukra) is endowed with Soma-guna (i.e., thermolytic properties) the female element (Ātava) presents the opposite property and is therefore Agni-guna (i.e., thermogenetic properties). The principles of earth, water, fire, air and ether are also present in men in their subtle forms and contribute to the formation of the material parts by their molecular adjustment in the way of supplying nutrition and in way of the adding to their bulk. 2.

Combination of Self with the impregnated matter :—The local Vāyu (nerve-force) heightens or aggravates the heat generated by the friction of the sexual organs in an act of copulation. The Vāyu and heat thus aggravated tend to dislodge the semen from its sac or receptacle in a man which enters into the uterus of a woman through the vaginal canal and there it mixes with the ovum (Ātavam) dislodged and secreted by similar causes. The combined ovum and semen are subsequently confined in the uterus (Garbhāśaya) After that, He who is known by the epithet, of Self-conscious, impressioner (creator of sensations and perceptions), toucher, smeller, seer, hearer, taster, Self or Ego, creator, wanderer, witness, ordainer, speaker, though eternal, unmanifested and incomprehensible in his real nature, takes hold of the five subtle or essential material principles contributed by the united impregnating matter, assumes a subtle shape throughout, marked by the three fundamental

qualities of Sattva, Rajas and Tamas, and led away by the Vāyu, lies confined in the uterus to be subsequently evolved out in the shape of a god, animal, or monster, as determined by his acts in the former existence 3.

Factors which determine sex:—The birth of a male-child marks the preponderance of semen over the ovum (in its conception); the birth of a daughter shows the preponderance of the maternal element. A child of no-sex (hermaphrodite) is the product when ovum and sperm are equal (in their quality and quantity) The first twelve nights after the cessation of the flow should be deemed as the proper period for conception, as being the time during which the ova are secreted. Certain authorities hold that there are women who never menstruate to all appearances 4—5.

Memorable verses:—The face of a woman (lit. a woman of undetected menstruation) becomes full and lively. A moist and clumsy deposit is found on the body, face, teeth and gums. She feels a desire for sexual intercourse and speaks sweet words. Her eyes, hair, and belly droop down. A sort of distinct throbbing is felt in her arms, thighs, mammae, umbilicus, perineum and buttocks. Her sexual desire grows intense and prominent, and its gratification gives her utmost joy and pleasure. These symptoms will at once indicate that a woman has menstruated (internally). 6.

Just as the petals of a full blown lotus flower are gathered up during the night, so the uterus (Yoni) of a woman is folded up (i.e., os of the uterus is closed) after the lapse of the menstrual period (i.e. fifteen days from the date of the flow). The menstrual flow, accumulated in the course of a month, is led in time by the local Vāyu through its specific duct (Dhamani) into the mouth of

the uterus (Yoni) whence it flows out odourless and blackish. 7.

Period of Menstruation:—The process (menstruation) commences at the twelfth year, flowing once in every month, and continues till the fiftieth* year when it disappears with the sensible decay of the body. 8

A visit† to one's wife on even days during the catamenial period (twelve days in all from the cessation of the flow) leads to the conception of a male child while an intercourse on odd days results in the birth of a daughter. Hence a man, seeking a male-issue, should approach his wife for the purpose in a clean body and with a quiet and calm spirit on an even date. 9.

A sense of fatigue and physical languor, thirst, lassitude and weariness in the thighs, suppression of the flow of semen and menstrual secretion (Sukra and Sonita) out of the uterus (Yoni), and throbbing in the organ (after coition) are symptoms of a recent fecundation. 10

Signs of Pregnancy—(M. T. :—A black rash (arcola) around the nipples of the mamma, the rising appearance of a row of hair (as far as the umbilicus), contractions of the eye-wings, sudden vomitings, nausea which does not abate even on smelling perfumes, water-

* Some are of opinion that the menstruation continues up to the sixtieth year.

† According to Videha, menstrual secretion flows less on even days, hence a son is born if the sexual intercourse be made on those days; whereas menstrual secretion becomes more on odd days, so a daughter is born if the intercourse be made on odd days.

According to Bhoja, a son is born from intercourse on even days and a daughter is born from that on odd days. The birth of a male issue is due to the preponderance of semen virile and that of a female sex is due to the preponderance of menstrual secretion. If both the secretions be equal (in quality and quantity) a hermaphrodite is issued.

brash, and a sense of general lassitude are the indications of pregnancy. II.

Prohibited conducts during gestation :—Immediately on the ascertainment of her pregnancy, a woman should avoid all kinds of physical labour, sexual intercourse, fasting, causes of emaciation of the body, day-sleep, keeping of late hours, indulgence in grief, fright, journey by carriage or in any kind of conveyance, sitting on her haunches, excessive application of Snehā-karmas etc., and venesection at an improper time (*i.e.*, after the eighth month of gestation), and voluntary retention of any natural urging of the body 12

Metrical Text :—The child in the womb feels pain in the same part of its body as the one in which its mother feels any ; whether this (pain) may be from an injury or through the effect of any deranged morbid principle (Dosha) of her organism. 13.

Development of the Fœtus :—In the first month of gestation a gelatinous substance is only formed (in the womb) ; the molecules of the primary elements (Mahābhūta—air, fire, earth, water, and ether) being acted upon by cold (Kapham), heat (Pittam) and air (Vāyu or nerve-force) are condensed in the second month. A lump-like appearance (of that confused matter) indicates the male-sex (of the embryo). An elongated-like shape of the matter denotes that the fœtus belong to the opposite sex ; whereas its tumour-like shape (like a Śīmalī-bud) predicts the absence of any sex (*i.e.* a hermaphrodite). In the third month, five lump-like protuberances appear at the places where the five organs—namely the two hands, two legs and the head—would be and the minor limbs and members of the body are formed in the shape of extremely small

papillæ. In the fourth month all the limbs and organs (of the body of the embryo) become more potent and the foetus is endowed with consciousness owing to the formation of viscus of the heart. As heart is the seat of consciousness, so as the heart becomes potent, it is endowed with consciousness and hence it expresses its desire for things of taste, smell etc (through the longings of its mother) The enciente is called double-hearted (Dauhrida) at the time, whose wishes and desires—not being honoured and gratified—lead to the birth of a paralysed, hump-backed, crooked-armed, lame, dwarfed, defect-eyed, and a blind child. Hence the desires of the enciente should be gratified, which would ensure the birth of a strong, vigorous and long-lived son. 14.

Memorable Verses:—A physician should cause the longings of a pregnant woman (Dauhrida) to be gratified inasmuch as such gratifications would alleviate the discomforts of gestation; her desires being fulfilled ensure the birth of a strong, long-lived, and virtuous son. A non-fulfilment of her desires during pregnancy, proves injurious both to her child and her ownself. A non-gratification of any sensual enjoyment by its mother (Dauhrida) during gestation tends to painfully affect the particular sense-organ of the child.

Longings and its effects during pregnancy:—An enciente longing for a royal interview during her gestation (fourth month) gives birth of a child, who is sure to be rich and to hold a high position in life. Her longing for fine silks, clothes, ornaments etc. indicates the birth of a beautiful child of æsthetic taste. The birth of a pious and self-controlled child is indicated by its mother's longing

for a visit to a hermitage. The desire of a pregnant woman to see a divine image or an idol, predicts the birth of a child in her womb who would grace the council of an august assembly in life. Similarly, a desire to see a savage animal on the part of a pregnant woman signifies the presence of a child of savage and cruel temperament in her womb. A desire for the flesh of a Godhà indicates the presence of a sleepy, drowsy person in her womb who would be tenaciously fond of good things in life. Similarly a longing for beef on the part of the mother (during gestation) indicates the birth of a strong and vigorous child capable of sustaining any amount of fatigue and physical pain. A longing for buffalo-meat of the mother indicates the birth of a hairy, valiant and red-eyed child (in her womb), a longing for boar-flesh indicates the birth of a drowsy child though valiant, a longing for venison indicates that of an energetic, determined and sylvan-habited child, a longing for Srimàra-meat indicates that of a distracted person; a longing for the flesh of Tittira bird indicates that of a child of timid disposition; whereas a desire on the part of an enciente for the flesh of any particular animal indicates that the child in the womb would be of such stature and would develop such traits of character in life as are peculiar to that animal. The desires of a woman during her pregnancy are determined by ordained fate and effects of the acts of the child in its prior existence (that are to be happened during the present life). 15

Development of the Fœtus :—In the fifth month the fœtus is endowed with mind (Manah) and wakes up from the sleep of its sub-conscious existence. In the sixth month cognition (Buddhi) comes in. In the seventh month all the limbs and members

of its body are more markedly developed. The Ojo-dhātu (in the heart of the foetus) does not remain silent in the eighth month*. A child born at that time (eighth month) dies for want of Ojo-dhātu soon after its birth, a fact which may be equally ascribed to the agency of the malignant monsters. Hence (in the eighth month of gestation) offerings of meat should be made to the demons and monsters (for the safe continuance of the child). The parturition takes place either in the ninth, tenth, eleventh or twelfth month of conception, otherwise something wrong with the foetus should be apprehended. 16.

The umbilical chord (Nādi) of the foetus is found to be attached to the cavity of the vein or artery of its maternal part through which the essence of lymph-chyle (Rasa) produced from the assimilated food of the mother, enters into its organism and fastens its growth and development, (a fact which may be understood from the analogy of percolation or transudation of blood). Immediately after the completion of the process of fecundation, the vessels (Dhamani) of its maternal body which carry the lymph-chyle (Rasa) and run laterally and longitudinally in all directions through it, tend to foster the foetus with their own transudation all through its continuance in the womb. 17.

Different opinions on the formation of the foetal body:—Śaunaka says that probably the head of the foetus is first developed since head is the only organ that makes the functions of all other organs possible. Kṛitaviryya says, it is the heart that is first developed since heart is the seat of Manah and Buddhi (mind and intellect). The son of

* Sometimes it passes from the body of the child to that of the mother and *vice versa*.

Parāśara says that the development of the umbilical region of foetus must necessarily precede (that of any other part of its body) inasmuch as it is through umbilical chord that an embryo draws its substance from mother's body. Mārkaṇḍeya says that the hands and feet of a foetus are first to be developed since they are the only means of movements in the womb. Śubhūti Gautama says that the development of the trunk is the earliest in point of time since all other limbs and organs lie soldered to and imbedded in that part of the body. But all these are not really the fact. Dhanvantari holds that the development of all the parts of the body of an embryo goes on simultaneously ; and they can not be perceived or detected in their earlier stages of development in the womb owing to their extremely attenuated size like a mango fruit or sprouts of bamboo. As the stone, marrow, pith etc of a ripe and matured mango-fruit or the sprouts of bamboo, cannot be separately perceived in the earlier stage of their growth but are quite distinguishable in the course of their development, likewise in the early stage of pregnancy the limbs and organs of the body (foetus) are not perceptible for their extremely attenuated stage but become potent (and therefore they are distinctly perceived) in the course of time for their development. 18.

Factors respectively supplied by the paternal and maternal elements :— Now we shall describe the parts and principles of the body of a foetus which are respectively contributed by the paternal element, maternal factor, the serum (Rasaja), the soul (Ātmaja), the natural (Sattvaja) and the innate physiological conditions (Sātmaja). The hairs of the head and body, beard and moustaches, bones, nails, teeth, veins (Sira), nerves, arteries (Dhamani),

semen and all the steady and hard substances (in the organism of a child) are contributed by the paternal element in the conception Pitraja ; whereas flesh, blood, fat, marrow, heart, umbilicus, liver, spleen, intestines, anus (Guda) and all other soft matters in the body owe their origin to the maternal element (Mātrija) ; strength, complexion, growth, rotundity and decay of the body are due to the serum (Rasaja). The sensual organs, consciousness, knowledge, wisdom, duration of life (longivity), pleasure and pain etc are the outcome of the spiritual element in man (Ātmaja). We shall describe the Sattvaja features of the body in the next chapter. Valour, healthfulness, strength, glow and memory are the products of a child naturally born with physiological conditions of the parents (Sātmyaja). 19.

Signs of male and female conception:—An eneiēte, in whose right mammæ the milk is first detected, who first lifts up her right leg at the time of locomotion, whose right eye looks larger, or who evinces a longing largely for things of masculine names, dreams of having received lotus flowers (red and white), Utpala, Kumuda, Āmṛataka, or flowers of such masculine denomination in her sleep, or the glow of whose face becomes brighter during pregnancy, may be expected to give birth to a male child ; whereas the birth of a daughter or a female child should be pre-assumed from the contriety of the foregoing indications. An eneiēte whose sides become raised and the forepart of whose abdomen is found to bulge out will give birth to a sex-less (hermaphrodite) child. An eneiēte, the middle part of whose abdomen becomes sunk or divided in the middle like a leather-bag, will give birth to a twin. 20.

Memorable verses :—Those women who are devout in their worship of the gods and the Bráhmíns and cherish a clean soul in a clean body during pregnancy are sure to be blest with good, virtuous and generous children ; whereas a contrary conduct during the period is sure to be attended with contrary fruits. The development of the limbs and the members etc. of a foetus in the womb is natural and spontaneous, and the qualities and conditions which mark these organs are determined by the acts of the child which are anterior to its genesis and were done in its prior existence. 21-22.

Thus ends the third Chapter of the S'árita Sthánam in the Su 'ruta Samhitá which treats of the generation and pregnancy.

CHAPTER IV.

Now we shall discourse on the Śārīram which treats of the development of a fetus in the womb, as well as of the factors which contribute to the growth of its different bodily organs and principles (**Garbha-Vyakāranam-Śārīram**). 1.

The Pittam (fiery or thermogenic) and Śleshma (lunar principles of the body, the bodily Vāyu, the three primary qualities of Sattva, Rajas, and Tamas (adhesion, cohesion and disintegration), the five sense organs, and the Self (Kāima-Puusha) are the preserver of the life (Pránáh) of the Foetus. 2

Folds of Skin :—Seven folds or layers of covering (Tvaka—skin) are formed and deposited on the rapidly transforming product of the combination of (semen) Śukra and Śonita (fertilized ovum) which have been thus charged with the individual Soul or Self in the same manner as layers (of cream) are formed and deposited on the surface of (boiling) milk. Of these the first fold or layer is called Avabhāsini (reflecting) as it serves to reflect all colours and is capable of being tinged with the hues of all the five material principles of the body. The thickness of this fold measures eighteen-twentieth of a *Vrihi** (rice grain) and it is the seat of skin diseases, such as Sidhma, Padma-

* The complexion of a person is due to this first layer, and as the colour of an opaque body is due to the rays that are reflected from its surface, this layer is rightly named Avabhāsini or reflecting layer.

** The text runs “Vriherashtadashabhāga,” which means eighteen (or so many) parts of a Vrihi; and Dallan comments that “Vrihi” stands for a measure equal to the twentieth division of a Vrihi or rice grain,

kantaka etc. The second fold (from the surface) is called *Lohitā*; it measures a sixteen-twentieth of a *Vrihi* and is the seat of such (cutaneous affections, as *Tilakāḷaka*, *Nyacheha* and *Vyanga* etc. The third fold or layer is called *Śveta*, which measures in thickness, a twelve-twentieth of a *Vrihi*, and forms the seat of such diseases as *Ajṅgali*, *Charmadala*, and *Maṣaka* etc. The fourth fold or layer is called *Tāmi* measuring an eight-twentieth of a *Vrihi* and forms the seat of such diseases as the various kinds of *Kilāsa* and *Kushtha* etc. The fifth fold or layer is called *Veḍini*, measuring in thickness a five-twentieth of a *Vrihi* and forms the seat of *Kushtha*, *Visarpa*, etc. The sixth fold or layer is called *Rohini*, which is of equal thickness as a *Vrihi* (grain), and is the seat of *Granthi*, *Apachi*, *Arvuda*, *Ślipada* and *Gala-ganda* etc. The seventh fold or layer is called *Māṃsa-dhara* twice a *Vrihi* in thickness and is the seat of *Bhagandara*, *Vidraddhi*, and *Arsa* etc. These dimensions should be understood to hold good of the skin of the fleshy parts of the body, and not of the skin on the forehead, or about the tips of the fingers, inasmuch as there is a surgical dictum to the effect that an incision as deep as the thickness of the thumb may be made into the region of the abdomen with the help of a *Vrihi-mukha* (instrument). 3

The *Kalās* too number seven in all and are situated at the extreme borders (forming encasement and support) of the different fundamental principles (*Dhātus*) of the organism. 4.

Memorable Verses :—As the duramen or core of a piece of wood or stem becomes exposed to view by cutting into it, so the root principles (*Dhātus*) of the body may be seen by removing the successive layers or

tissues of its flesh. These Kalás are extensively supplied with Snáyus (fibrous tissues), bathed in mucous, and encased in a membranous covering. 5-6

Mánsadhará-Kalá:—Of these Kalás, the first is named Mánsadhará (fascia), in the contained flesh (bodily substance of the Kalá) of the Śírá (veins), Snáyus (fibrous tissues), Dhamani (arteries) and other Śrotas (channels) are found to spread and branch out. 7.

Memorable Verse:—As the roots and stems of a lotus plant respectively situated in the ooze and water (of a tank), do simultaneously grow and expand, so the veins etc situated in the flesh, grow and ramify. 8.

Raktadhará-Kalá:—The second Kalá is called Raktá-dhará (Vascular tissue of the blood vessels etc) The blood is contained in these inside the flesh and specially in the veins (Śírá) and in such viscera of the body as the liver and spleen. 9.

Memorable Verse:—As a plant containing latex in its tissues, when injured or pricked, exudes milky juice, so blood oozes out instantaneously on the flesh of the body (supplied with the Raktádhará-kalá) being injured 10.

Medadhará-Kalá:—The third Kalá is called Medadhará (adipose tissue). Meda (fat) is present (chiefly) in the abdomen of all animals, as well as in the cartilages (small bones). The fatty substance present in large bones is called Majjá (marrow). 11.

Memorable Verse:—Marrow is found inside large bones, whereas a substance similar in appearance and found inside other bony structures (cartilages) should be considered as Meda, mixed with blood. The fats, present in purely muscular structures, go by the name of Vasa (muscle-fat) 12-13.

Śleshmādhara-Kalā :—The fourth Kalā is called Śleshmādhara (Synovial tissues) and is present about all the bone-joints of animals. 14.

Memorable Verse :—As a wheel easily turns upon a well greased axle, so the joints moistened by the mucous (Śleshma) contained in these sacs admit of easy movements. 15

Purishadharā-Kalā :—The fifth kalā is called Purishadharā and being situated in the Kōstha (abdomen) serves to separate the fecal refuse in the (Pakvāsaya) lower gut (from other ingested matters). 16.

Memorable Verse :—This Kalā extends about the liver, upper and lower intestines and other abdominal viscera and keeps the feces in the lower intestines (Undukam) separate and hence is called Maladhara-kalā 17.

Pittadharā-Kalā :—The sixth Kalā is called Pittaphara-kalā; it holds (the chyme derived from) the four kinds of solid and liquid foods (in the Pitta-sthanam or biliary region) propelled from the stomach (Amāsaya or Grahani-Nādi) and on its way to the (Pakāsaya) intestines (for the proper action of the digestive juices upon it) 18.

Memorable Verse :—The four kinds of food, viz. those that are chewed, swallowed, drunk, or licked, and brought into the intestines (Kōstha) of a man, are digested in proper time through the heating agency (action) of the Pittam 19.

Sukradharā-Kalā :—The seventh Kalā is called Sukradharā (semen-bearing), which extends throughout the entire body of all living creatures. 20.

Memorable Verse :—The physician should know that like fat (Sarpī) in the milk, or sugar in the expressed juice of sugar cane, the (seat of) semen is co-extensive with the whole organism of a man (or animal)

The semen passes through the ducts situated about two fingers' breadth on either side (vas deferens) and just below the neck of the bladder and finally flows out through the canal. The semen of a man during an act of sexual intercourse with a female under exhilaration comes down from all parts of his body owing to the extreme excitement (engendered by the act). 21-33.

The orifices of the *Ārtava*—carrying channels (vessels of the uterine mucosa) of a pregnant woman are obstructed by the foetus during pregnancy and hence there is no show of menses (during gestation). The menstrual blood thus obstructed in its downward course ascends upwards; a part of it accumulates and goes to the formation of placenta (*Aparā*), while the rest ascends higher up and reaches the breasts; this is the reason why the breasts of a pregnant woman become full and plump. 24.

The spleen and liver of the foetus are formed out of blood; the lungs are made of the froth of the blood; and the *Unduka* or fæcal receptacle, of the refuse matter (*Mala*) of the blood. 25,

Metrical Texts :—The intestines (*Antra*), the bladder (*Vasti*), and the anus (*Guda*) of the foetus are formed out of the essence of the blood and *Kapham*, baked by the *Pittam* into which *Vāyu* enters as well. As fire fed by draughts of air refines the dregs of golden ore and transforms it into pure metal, so blood and *Kapham* acted upon by the heat of the *Pittam* are transformed into the shape of the intestines etc. in the abdomen. The tongue is made of the essence of the flesh, blood and *Kapham*. The *Vāyu*, combined with heat (*Pittam*) in adequate proportion, rends through the internal channels into the flesh and transforms them into muscles (*Peśī*). The *Vāyu*, by taking off

the oily principles of fat (Meda), transforms them into (Śirā) and (fibrous tissues) Snāyu, the underbaked (Mridu) ones being converted into the Śirā and the overbaked (Kshara) ones into the Snāyu. The internal cavities (Āśayas) of the body mark the spots or regions where the Vāyu had constantly stayed in its embryo stage 26-29.

The kidneys (Vrikkas) are made out of the essence of the blood and fat. The testes are formed out of the essence of the blood, flesh, Kapham and fat. The heart is formed out of the essence of blood and Kapham; and the vessels (Dhamanis) carrying the vital principles of the body are attached to it (heart). The spleen and the lungs are situated below and beneath the heart on the left side, and the liver and Kloma (Pancreas?) below and beneath it (heart) on the right. The heart is the special seat of consciousness (Chetana) in all creatures. Sleep sets in when this viscus (heart) of a person becomes enveloped by the effects of the Tamas (principles of illusion or nescience) 30-31.

Memorable Verse :—The heart which is of the shape of a lotus bud hangs with its apex downward, folding itself up during sleep and expanding with the return of wakening or consciousness 32.

Sleep and its virtues :—Sleep is the illusive energy of God (lit.—the all-pervading deity) and naturally has its sway over all created beings. The kind of sleep which sets in when the sensation-carrying channels (Snāyu) of the body are choked by Sleshmā, which abounds in the quality of Tamas, is known as *Tāmasi-nidra*. It is this sleep which produces unconsciousness at the time of dissolution or death. A man of *Tāmasika*-temperament sleeps both in the day and night; one of the *Rājasika*-temperament sleeps either in the day or in the night; while sleep never visits the

eyelids of a man of Sāttvika-temperament before midnight. Persons with enfeebled Kapham and aggravated Vāyu, or suffering from bodily and mental troubles, get little sleep, and if at all, their sleep is of the Vaikārika or delirious type (*i.e.* much disturbed)*. 33-34

Memorable Verses :—O Suśruta ! the heart is said to be the primary seat of consciousness (*Chetanā*) in the animated beings. Sleep overcomes a man whenever the heart is enveloped in the illusive effects of Tamas. Sleep is the offspring of Tamas and it is the quality of Sattvam that brings on awakening. This is the fundamental law of Nature. The self-conscious individuality (*Self*), ensconced in the material frame of man which is composed of the five material elements, recollects through the agency of the mind (*Manah*), which abounds in the quality of Rajas, the remembrance of his by-gone existences, and awakens up in his psychic plane the pictures of good or evil deeds done by him therein. Dreams are but the embodiment of these recollections. The self or *Jivatma*, though he sleeps not himself, is said to be sleeping, whenever the sense organs are overpowered by the illusive energy of Tamas. 35.

Day sleep is forbidden in all seasons of the year, except in summer and in the case of infants, old men, and persons enfeebled by sexual excesses, or in Kshata-kshina diseases and in case of habitual tipplers. A sleep in the day may be enjoyed after the fatigue of a long journey, riding, or physical labour, or on an empty stomach. It may be allowed as well to men suffering from the loss of fat, Kapham or blood, to those of

* Such persons may get sleep only, when being tired and exhausted they cease to think of their affairs.

O f Charaka .—When the active self of a person, tired in body and mind, loses touch with his worldly affairs, sleep comes to him,

scanty perspiration, or of dry or parched constitution, and also to those who have been suffering from indigestion and who may sleep for a Muhurta (48 minutes) in the day time. Those who have kept late hours in the night may sleep in the day for half the time they have watched in the night (and no more). Day sleep is the outcome of perverted nature and all the Doshas of the body are aggravated by a sleep in the day, bringing on many a troublesome complaints such as cough, asthma, catarrh, heaviness of the body, aching or lassitude in the limbs, fever, loss of appetite etc. On the other hand, the keeping of late hours in the night develops symptoms (Upadrava) which are peculiar to the deranged Vāyu and Pittam. 36

Memorable Verses:—Hence, one should not sleep in the day, nor keep late hours. Having known both these acts to be injurious, the wise should observe moderation in sleep. A conformity to the preceding rule of conduct is rewarded with health, good humour, strength, healthful complexion, virility and beauty, a frame which is neither too fat nor too thin, and a long life of a hundred years). A day sleep may not prove injurious to those who are habituated to it and conversely keeping late hours at night may not tell upon the health of those to whom it is customary. 37-39

An aggravated condition of the bodily Vāyu or Pittam, an aggrieved state of the mind, loss of vital fluid, and a hurt or an injury may bring on insomnia, the remedy being the adoption of measures antagonistic to those which destroy sleep. The following measures are useful in cases of sleeplessness—such as anointing the body, rubbing of oil on the head, soft massages of the body (with cleansing paste) and shampooing; a diet consisting of cakes and pastry made up of Sāli-ice and

wheat prepared with sugar or other derivatives of sugar-cane, sweet or soothing articles with milk or meat juice or flesh of animals of the Biskira or Vileśaya class, and eating of grapes, sugar and sugar-cane at night, are beneficial (in such cases); so also a soft and pleasant bed, and easy and convenient seats and means of locomotion. Hence, a wise physician should advise those and similar other measures to allay insomnia. 40-41.

Excessive sleep should be remedied by emetics, Sansódhana measures, fastings, bleeding, and works which tend to disturb the mental equanimity of man. Keeping up at night is beneficial to persons afflicted with obesity, poison or the deranged Kapham; so also a nap in the day is beneficial to people troubled with hiccough, colic pain, dysentery, indigestion, or thirst. 42-43.

Somnolence or Drowsiness etc. :—In this kind of light sleep, or in the preliminary stage of sleep, the sense organs are overpowered and remain only partially cognisant of their respective objects and all (subjective and objective) symptoms of a sleepy person such as, yawning, sense of fatigue and heaviness of the limbs, present themselves in succession; these are the special features of Tandra. Once (prolonged) inhaling of the air through a widely open mouth and subsequent exhaling with the contraction of the limbs and tearful eyes are (all together) called Jrimbha or yawning.

A sense of fatigue without any physical labour which comes upon a person unaccompanied by hurried respiration is called Klama. It obstructs the proper functions of the senses as also the workings of the active organs.* An inordinate love of pleasure and a great aversion to pain, attended with an apathy to all sorts of

* Hand, leg, anus, and generative organ etc.

work even with the capacity of carrying them through is called *Ālasyam* (laziness) Nausca, without vomiting of ingested food, attended with salivation and formation of sputum, and cardiac distress are the symptoms of *Utkleśham*. A sweet taste in the mouth, drowsiness, a beating pain in the heart, dizziness, and non-relish for food are the signs of *Glāni* (languor). A feeling as if the whole body were wrapped in a wet sheet, accompanied by an extreme heaviness of the heart, is called *Gauravam*. 44-50

Loss of consciousness (*Murchhā*) is due to an excess of the deranged Pittam and to the quality of the Tamas; vertigo (*Bhrama*) is due to an aggravated state of the Vāyu, Pittam, and to the quality of the Rajas, drowsiness (*Tandra*) is due to a similar condition of the Vāyu, Kapham and to the quality of the Tamas, while sleep (*Nidra*) is produced by the predominance of Kapham and to the quality of the Tamas in the organism. 51

The growth of a foetus in the womb is effected by the serum (*Rasa*) prepared out of the food (assimilated by its mother) incarcerated by the Vāyu in the internal passage of its body 52.

Memorable Verses :—Be it clearly understood that there exists fire or heat (*Jyoti*) in the umbilical region of the foetus which is fanned by its bodily Vāyu and thus contributes to the growth of its body. The same Vāyu in combination with the heat (thus generated), expands the upward, downward, and lateral channels (in the body of the embryo) and thus leads to the growth of the foetus. The eyes (*Dristi*—aperture of sight) and the hair-follicles of a man do not

* In the text we find the word "Indriya" which refers to both *Jñānendriya* (sensory functions) and *Karmendriya* (motor functions) of the body.

participate at all (in the general expansion of the body). This is a law of nature, and is the opinion of Dhanvantari. On the other hand the growth of hair and finger nails continue even when the body enters the stage of decay. This also is a law of nature. 53-56.

The Temperaments :—The temperaments (Prakriti) of persons may be of seven different types, according as the deranged Doshas of the body are involved therein, either severally, or in combination of two or of all the three together. The temperament (Prakriti) of a man is determined by the preponderance of the particular Doshas at the time of his generation (actual combination of the semen and ovum) and is marked by that preponderant Dosha. The characteristics of the different Prakritis are now described 57-58.

Vātaja-Temperament :—A man of *Vātika-temperament* is wakeful, averse to bathing and cold contact, unshapely, thievish, vain, dishonest and fond of music, the soles of his feet, and the palms of his hands are much fissured, has often a rough and grisly beard and moustache, finger nails and hairs in him; he is hot-tempered and is given to biting his finger nails and grinding his teeth (when asleep). Morally he is impulsive, unsteady in his friendship, ungrateful, lean, and rough, his body is marked with a large number of prominent veins (Dhamani), he is incoherent in his habit and vacillating in his temper. He is a fast walker and dreams of scaling the skies in his sleep. His eyes are always moving. His mind is never steady. He makes few friends, is capable of accumulating very little money and talks incoherently. The traits of his character etc. seem to resemble those of a goat, jackal, hare, mouse, camel, dog, vulture, crow, and of an ass 59-60.

Pittvaja-Temperament :—A man of *Pittvaja temperament* perspires copiously emitting a fetid smell. His limbs are loosely shaped and yellowish in colour. The finger nails, eyes, palate, tongue, lips, soles and palms of such a person are copper-coloured. He looks ugly with wrinkles, baldness and grey hair; he eats much, is averse to warmth and irritable in temper, though he cools down very soon. He is a man of middling strength and lives up to middle age. He is intelligent and possesses a good retentive memory and loves to monopolise the conversation (by pulling down any speaker that may be present). He is vigorous and is simply irresistible in battle. He dreams in his sleep of such things as meteors, lightning-flashes, fire, Nágeshvāra, Palāśa or Karnikāra plants. He is never overpowered with fear nor bends before a powerful antagonist; he protects the suppliant and is very often afflicted with suppuration in the cavity of the mouth. The traits of his character resemble those of a serpent, an owl, a Gandharba (heavenly musician), Yaksha, cat, monkey, tiger, bear, and of a mongoose. 61-64.

Kaphaja-Temperament :—The complexion of a man of *Sleshmā* temperament resembles either the colour of a blade of grass, blue lotus, polished sword, wet Anishta, or that of the stem of the Sara grass. He is comely in appearance, fond of sweet tastes, grateful, self-controlled, forbearing, unselfish and strong; he does not hastily form any opinion, and is fast in his enmity. His eyes are white; his hair curly and raven black. He is prosperous in life. His voice resembles the rumblings of a rain-cloud, the roar of a lion, or the sound of a Mridanga. He dreams in his sleep of large lakes or pools decked with myriads of full blown lotus flowers, swans and Chakravākas. His eyes are slightly

red towards the corners, the limbs are proportionate and symmetrically developed with a cool effulgence radiating from them. He is possessed of the qualities of the Sāttvika stamp, capable of sustaining pain and fatigue and respectful towards his superiors. He possesses faith in the Śāstias and is unflinching and unchanging in his friendship; he suffers no vicissitudes of fortune, makes large gifts after long deliberation, is true to his word and always obedient to his preceptors. The traits of his character resemble those of Brahma, Rudra, Indra, Vāruṇa, a lion, horse, an elephant, cow, bull, an eagle, swan and of the lower animals. 65-68.

A combination of two different temperaments should be called a double temperament or a *Dvandaja* one, and one of all the three temperaments in a person should be stated as a *Sānnipātika* one. 69.

The temperament of a man is never altered, nor does it suffer any deterioration or abatement. A change, abatement or deterioration in any particular case should be regarded as the harbinger of death. As a worm, bred in poison, is not troubled with it, so the temperament of a person however painful to others does no inconvenience to himself. Several authorities hold that the temperaments of persons have their origin in the material elements of the body and accordingly they classify them as the *Vātika Prakṛiti*, the *Taijasa Prakṛiti*, and the *Āpya* (watery) *Prakṛiti*, the characteristic traits of which respectively correspond to the first three temperaments described above. 70-71.

A man of the *Pārthiva* temperament is large in his stature, and is firm, strong and muscular in his limbs. A man of the *Nabhasa* temperament is pious and long-lived, has large aural cavities. The mental temperaments are classified according to their qualities. 72.

Sáttvika Features :—The features of a **Brahma-kāya** person are cleanliness of person and conduct, belief in the existence of God, a constant reader of the Vedas, a worship and reverence of elders and preceptors, hospitality and celebration of religious sacrifices. Those of a **Mahendra-kāya** person are valour, command, constant discussion of the Śāstras, maintenance of servants and dependents and magnanimity. The features of a **Karuna-kāya** person are a liking for exposure to cold, forbearance, a brown hue of the pupils, golden colour of the hair and sweet speech. The features of a **Konvera-kāya** person are, arbitration of disputes, capacity of bearing hardships, earning and accumulation of wealth, and capacity of propagation or fertility. The features of a **Gandharva-kāya** person are love of garlands and perfumes, fondness of songs and music, and love making. The features of a **Yamya-Sattva** person are sense of duty, promptness, firmness of action, courage, memory, purity, and absence of anger, illusion, fear and malice. The features of a **Rishi-Sattva** man are divine contemplation, observance of vows, complete sexual abstinence, performance of Homas, celebration of religious sacrifices, knowledge, wisdom and cultivation of divine or spiritual science. These seven types of men should be considered as belonging to the Sáttvika group (of Sáttvika mental temperament). Now hear me describe the features of men of Rājasika stamp (of mind). 73.

Rājasika Features :—**Asura-Sattva** men are affluent in circumstances, dreadful, valorous, inascible, jealous of other men's excellence, gluttonous and fond of eating alone without sharing with any one else. A **Sarpa-Sattva** man is irritable, laborious, cowardly, angry, double-dealing, and hasty in eating and sexual

intercourse. A **Śakuna-Sattva** man is gluttonous, intemperate in sexual matters, irritable and fickle. A **Rākshasa-Sattva** man is solitary in his habits, fierce, jealous of others excellence, externally pious, extremely vain and ignorant. The characteristics of a **Paisācha-Sattva** man are eating food partaken of by another, irritability of temper, rashness, shamelessness, and covetousness of female possessions. Those of **Preta-Sattva** man are utter want of knowledge as regards duty, laziness, miscriableness, envy, covetousness, niggardliness. These six belong to the **Rājasika** cast of mind. Now hear me describe the characteristic traits of men of the **Tāmasika** temperaments. 74.

Tāmasika Features:—The features of a **Pāsava-Sattva** man are perverseness of intellect, parsimoniousness, frequent sexual dreams and incapacity of ascertaining or discerning anything. The features of **Matsya-Sattva** man are unsteadiness, stupidity, cowardice, fond of intermissive quarrel and oppression and a longing for water. The features of a **Vanaspati-Sattva** man are fondness of staying at the same place, constant eating and absence of truthfulness, piety, riches and enjoyment. Thus the three types of **Tāmasika** temperament have been described, A physician should take in hand a patient with an eye towards these mental traits etc. A physician should coolly deliberate upon the different types of temperament described herein and their characteristic features 75-76.

Thus ends the fourth Chapter of the *S'arira Sthānam* in the *S'usruta Samhitā* which treats of foetal development etc.

CHAPTER V.

Now we shall discourse on the Śārīram which treats of the anatomy of the human body (Śārira-Śankhyā-Vyākaranam). 1

Definition of Garbha and Śārira :—

The combined semen and ovum (Sūkīa and Śonita) in the womb, mixed with (the eight categories known as) the Prakṛiti and (her sixteen modifications known as) Vikāśa, and ridden in by the Ātmā (self-conscious self), is called the foetus. There is consciousness in the embryo. The Vāyu (or the vital force) divides it into Dosha, Dhātu, Mala, etc, limbs, and organs, etc. The Teja (or the heat latent in the fecundated matter) gives rise to the metabolism of the tissues ; the Apa (water) keeps it in a liquid state, the Kṣhiti (earth) is embodied in the shape of its species ; and the Ākāśa (ether) contributes to its growth and development. A fully developed foetus with all its parts, such as the hands, feet, tongue, nose, ears, buttocks etc and the sense-organs, is called Śārīram or body. The body is composed of six main parts, namely, the four extremities (upper and lower), the trunk or middle body, and the head. 2.

Different members of the body :—Now we shall describe the Pratyangas or members of the body. The head, the belly (Epigastrium), the back, the navel (umbilical region), the forehead, the nose, the chin, the bladder, and the throat (neck), occur singly ; the ears, the eyes, the nostrils, the eye-brows, the temples, the shoulders, the cheek, the armpits, the breasts, the testes, the sides, the buttocks, the arms, the thighs, and the knee-joints, etc., occur in pairs. The fingers and

toes which number twenty in all, and the interior channels (Śiṭas) of the body, to be presently described, are likewise included within the Pratyangas. These are the different Pratyangas of members. 3

Enumeration of the different limbs and members of the body :—The different layers of the skin, the Kalás, the Dhátus (root principles, such as blood, chyle, etc.), the Mala (excrements, the Doshas (morbific principles, such as the Váyu, Pittam, or Kapham), the spleen, the liver, the lungs, the colon and cæcum (Unduka), the heart, the cavities of viscera (Āśayas), the intestines (Antras), the Viikkou (Kidneys) the Śrōtas (internal passages or ducts), the Kandarí (nerve trunks), the Jálas (membranes), the Kurchas,* the Rajjus (tendons) the Sevanis (sutures), the Sanghátas (facets), the Simanta, the bones, the joints, the Snáyu (ligament), the Peśi (muscles), the Marmas (vital parts, such as anastomosis of veins and arteries, etc.), the Śira (veins), the Dhamani (arteries), and the Yogaváhuni Śiṭas†, constitute what is collectively called the organism. 4.

Their number :—The layers of skin (Tvaka) number seven in all. There are seven connective tissues or fascia (Kalás) The cavities or viscera (Āśayas) are seven in all. The root principles (Dhātu) of the body are seven in number. There are seven hundred Śirí (veins), five hundred Peśi (muscles), nine hundred Snáyu (ligaments), three hundred bones, two hundred and ten Sandhi (joints), one hundred and seven Marmas (vital parts), twenty-four Dhamanis (arteries etc.), three Doshas (morbific principle—such as the Váyu, Pittam,

* Meetings of muscles, ligaments, veins, nerves and bones as at the annular ligament.

† Those, that are in connection with the Dhamani.

and Kapham), three kinds of Māla (excrements) and nine Śrota (canals) in all in the human organism, which will be described in detail later on. 5.

The skin, Kalā, the root principles of the body, (Dhātus) the morbid principles (Doshas) such as the Vāyu etc, of the body, liver, spleen, lungs, Unduka (colons), heart and the Vrikkas (kidneys) have been already described (in the preceding chapter). 6.

The Āśayas (cavities or viscera) :—They are named as the Vātāśaya (the receptacle of the bodily Vāyu), Pittāśaya (the receptacle of the Pittam), Śleshmāśaya (the receptacle of Śleshmā or Kapham), Raktāśaya (the receptacle of the blood), Āmāśaya (stomach), Pākvaśaya (intestines), and the Mutrāśaya (bladder). Females have another Āśaya (receptacle) in addition to these which is called the Garbhāśaya (uterus). The intestines (of an adult) male, measure fourteen cubits (three and a half Vyāmas) in length, while those of an adult female measure only twelve cubits. 7—8.

The Śrotas or Channels :—The nine canals (Śrotas) of the body, such as the ears, the eyes, the mouth, the nostrils, the anus and the urethra, open on the outside. Females have three more such ducts or canals as the two breasts (milk channels) and the one which carries off the menstrual blood. 9.

The Kandarás :—The Kandarás number sixteen in all, of which four are in the legs, four in the hands, four in the neck, and four in the back. The Kandarás of the four extremities extend to the roots of the nails of the fingers and toes. The four Kandarás of the neck, connecting it with the heart, extend down to the penis. The four Kandarás at the back and in the region of the Śiṅṇi extend down to the buttocks

(Vimba) These Kandaráś terminate above in the head, the thighs, the breast and in the balls of the shoulders respectively (i.e. the Kandaráś of the neck terminate above in the head, those of the legs in the thighs, those of the dorsum in the chest, and those of the arms in the shoulders) 10.

The Jála or Plexuses :—The Jála or plexuses are of four kinds, such as the muscular plexuses, the Vascular plexuses, ligamentous plexuses, and bony plexuses. One of each of the four kinds of plexuses, is found about each of the Manibandda (wrists) and Gulfa (ankles). These four kinds of plexuses intermingle and cross one another in the form of a net-work. The whole body is a chain-work of plexuses. 11.

The kurchas :—There are six Kurchas* in all ; of which two are in the hands, two in the feet, one in the neck, and one in the penis. There are four great muscular cords or kajjus which originate from either side of the spinal column, one pair going inwards and another outwards for the purpose of binding the muscles together.† 12—13.

The Sevani or Sutures :—‡ They are seven in number, e.g. five in the head, one in the tongue and one in the genital. An incision should not be made into any of these sevani. 14.

The Asthi-Sanghátas :—The Asthi-sanghátas (collection of a number of bones) are fourteen in

* The Kurchas (clusters or groups) may be made up of muscles, bones, vessels and ligamentous structure—Dallana.

† According to Gayádhāra four such cords are found on each side of the spinal column and thus totalling eight in all.

‡ Sevani evidently means the central tendinous band which looks like a suture from which the muscles on either side arise.

number. Of these one is found in each of the following positions, viz the two ankles, the two knees and the two groins ; of the remaining eight, six are to be found in similar positions of the upper extremities, namely one in each of the wrists, elbows and axillas ; one is in the cranium and another in the regions of the Trika* (thus making up fourteen in all) 15

The Simantas :—The Simantas number fourteen in all, and are respectively situated about the place of each of the aforesaid Asthi-sanghāta. Several authorities assert that there are eighteen Sanghātas.† 16.

The Bones :—According to the followers of the *Āyurveda* (general medicine), the entire number of bones in the human body is three hundred and sixty ; whereas *Salya-Tantram* (the present work) counts only three hundred. Of these, one hundred and twenty are to be found in the (four) extremities, one hundred and seventeen in the pelvis (*Śroni*), sides (*Pārsva*), back, chest (*Urah*) and the region of the abdomen (*Udara*), and sixty-three in the neck and the regions above, thus numbering three hundred in the aggregate.‡ 17.

* "Trika" generally means the sacral region, but Dallanan says that here it refers to the meeting of the two clavicles with the breast-bone

† According to them four more Asthi sanghātās are to be found over and above the fourteen already mentioned ; these are—one above the sacrum, one above the chest, one at the junction of the thorax and abdomen, and one at the acromial end (of the Scapula).

‡ Pundita Gangadhara Kavirāja of Murshidabad in his famous commentary, known as the *Tikā jalpa-kalpa-taru*, in the 7th. chapter of *Sāra Sthanam* in the *Charaka Samhitā* states —

"In the surgical text-book of *Suśruta* the number of bones in the human body is given to be three hundred in all. Of these, one hundred and eight bones are in the four extremities ; one hundred and twenty-six in the pelvic cavity (*Śroni*), sides (*Pārs'va*), back (*Prishtha*), (*Aksha*) collar-bones and breast (*Urah*) ; and sixty-six in the region

Bones of the four Extremities:—There are three bones in each toe of the foot, thus making fifteen bones altogether (in the toes of each leg). Ten bones constitute the Tala (sole), Kurcha (cluster), and Gulpha (ankle) of each leg, and one forms the Páshni (heel); two bones are found in the Janghá (leg); one in the Jánu (knee), and one in the Uru (thigh), thus making thirty bones in one lower extremity. The same number holds good in the case of the other leg as well as in that of the two upper limbs (Thus the bones in the four extremities are one hundred and twenty in all). 18

Bones of the Trunk:—Five bones form the S'roni (pelvic cavity), of these four are found about the Guda (anus), Bhaga (pubis), and the Nitamva

upward the neck. Thus the total number of three hundred is made up. Now there are three bones in each toe of the feet; this makes fifteen altogether. Seven bones constitute the sole (Tala), cluster (Kurcha), and the ankle (Gulpha). There is one bone in the heel (Páshni), two in the leg (Janghá), one in the knee (Jánu), and one in the thigh (Uru). Thus there are twenty-seven bones in one lower limb. The same number applies to the other lower limb as well as to the two upper limbs. Thus a total number of one hundred and eight bones is made up. There are five bones in the pelvic cavity (S'roni); of these there are two in the hips (Nitamba), and the pubes (Bhaga), anus (Guda) and sacrum (Trika) is constituted with one bone each. There are thirty-six bones in one side (Párs'va) and the same count applies to the other. There are thirty bones in the back (Prishtha); two in the collar-bone (Akshasanjna); seventeen in the breast (Ura); eleven in the neck (Grivá); four in the wind-pipe (Kantha-nádi); and two in the jaws (Hanu). There are thirty-two teeth. There are three bones in the nose (Nása); two in the palate (Tálu), one each in either cheek (Ganda), ear (Karna) and temple (S'ankha), making six together; and six in the cranium (Sira). Thus a total number of sixty-six bones is made up. (Hence) the total number of three hundred bones is made (with the grand total of the three foregoing totals). Thus the list of bones of a skeleton is described "

(hips), and the fifth one is the Trika or triangular bone (the sacrum). There are thirty-six bones in one Páśva (side), and the same number in the other; thirty in the Pīśhtha (back), eight in the Urah (chest), and two more known as Akshaka (collar-bone) (Thus making one hundred and seventeen in all). 19.

Bones above the Clavicles :—There are nine bones in the Grivá (neck); four in the Kantha-nádi* (wind-pipe); two in the Hanu (Jaws) The teeth number thirty-two. There are three bones in the nose; one in the Tálu (palate), also one in each Karna (ear), Śankha (temple), and Ganda (cheek), (thus making six in all), six bones form the Śirá (cranium) [Thus making sixty-three in all] 20

Different kinds of Bones and their situations :—These bones may be divided into five classes (according to their character), such as the Kapāla, Ruchaka, Taruna, Valaya and the Nalaka. The bones, situated in the knee-joints, shoulders (Ansa†), hips (Nīlamvas), cheeks (Ganda), palate, temples, and the cranium belong to the Kapāla kind (flat bones). The teeth belong to the Ruchaka class. The bones in the nose, ears, throat (trachea) and the socket of the eyes (Akshi-kosha†) are called Taruna (cartilages), while those which are found in the palm (wrist), foot (ankle), sides back, chest and regions of the abdomen, belong to the Valaya (irregular or curved) class. The remaining

* Tala, Kureha, and Kantha nādi are identical with Charak's Sālaká, Sthána and Jātru respectively.

† Though it is asserted here that there exist Taruna bones in the sockets of the eyes (Akshi kosha) but there is no mention at all in the text, of the presence of any such therein. There is no mention of the shoulder-blade (Ansa) here though it is a part of the skeleton.

bones belong to **Nalaka** class (long-bones, lit.—reed-like or cylindrical). 21

Memorable Verses :—As trees are supported by the hard core inside their trunks, so the body is supported (and kept erect) by the firm bones (which are found in its inside). And since these bones form the pith (Sáira) of the human organism, they are not destroyed even after the destruction and falling off of the attached flesh, skin, etc. of the body. Muscles are attached strongly to the bones by means of the veins (Sírás) and ligaments (Snáyus), and are thus kept in position and do not fall off. 22

The Sandhis or Joints—(M. T.) :—The joints may be divided into two kinds according as they are immovable (synarthrosis) and movable (diarthrosis). Those which are situated at the four extremities as well as in the Kati (waist) and Hanus (jaws) are movable ; the others are known to be unmovable by the learned. There are two hundred and ten articulations (Sandhis) in the human body. Of these sixty-eight are in the four extremities, fifty-nine in the trunk (Koshtha), and eighty-three in the neck and in the region above it. 23.

Sandhis of the four Extremities :—Three joints are found in each toe, two only in the great toe, thus making fourteen in each leg, one is placed in each ankle, knee-joint and groin, thus making seventeen Sandhis in each leg or thirty-four in the two lower extremities. A similar number is to be found in each of the two upper extremities. 24-25.

Sandhis of the koshtha and Clavicles :—There are three Sandhis about the Kapála or flat bone in the Kati (waist, hence pelvis), twenty-four in the vertebral column ; twenty four in the sides, eight in the

chest ; eight in the Grivá (neck) ; three in the Kanthas (windpipe), eighteen in the cords or bands (Nádi) binding the Kloma and the heart , thirty-two about the roots of the teeth, one in the region of the thyroid (Kákalaka) ; one in the nose , two in the eyes , one in each of the two ears, temples and cheeks (thus making six in all) , two about the joints of the jaw-bones , two over the eye-brows ; two above the temples ; five in the Kapála bone of the fore-head and one in the head. 26 27.

Their forms, distinctions, and locations :—

These joints may be divided into eight different classes (named after the objects which they respectively resemble in shape), namely Kora (hinged or lap-shaped), Udukhala (ball and socket), Sámudga (back of the palm), Pratara (raft), Tunna-sevani (seam-like or dove-tailed), Váyasa-tunda (crow-beak), Mandala (circular), and Sankhá-vartah (involutions of conch-shell) The joints in the fingers, wrists, ankles knee-joints and elbows (Karpura) belong to the Kora group. Those in the axilla or shoulder-joint (Kakshá) teeth, and hip (Vankshana) are of the Udukhala type. The joints in the region of the anus, vagina, shoulders (Ansa-pitha — i.e. glenoid cavity) and hips, belong to the Sámudga form. The joints in the neck and the spinal columns, belong to the Pratara (irregular) type , while those found in the Kapála bones of the pelvis (Kati) and the forehead, are of Tunna-sevani (suture) form. The joints on either side of the cheek-bones (temporomandibular) belong to the Váyasa-tunda type. The Mandala joints occur in the encircling Nádi of the heart, throat, eyes and Kloma. Sankhá-varta joints occur in the bones of the ears and the nostrils. The peculiar features of these different kinds of joints (Sandhis) are evident from their names. 28.

Metrical Text :—Only the bone-joints have been enumerated and described ; the joints of muscles ligaments and veins are innumerable. 29.

The Ligaments (Snáyu) :—There are nine hundred ligaments (Snáyus) in the human body, of which six hundred occur in the four extremities ; two hundred and thirty in the trunk (Kos'ṭha) and seventy in the neck and upwards. (Of the six hundred ligaments in the four extremities, six ligaments are situated in each toe making thirty (in the toes of each foot) ; thirty in the Tala (soles), Gulpha (ankles), and the Kurcha (ankle-joint) ; thirty in the leg (Janghá) ; ten in the knee-joints (Jánu) ; forty in the Udara (abdomen) , ten in the groin (Vankshana) , thus making one hundred and fifty in each leg. The same number is found in the other lower limb and in each of the two upper extremities. (Of the two hundred and thirty ligaments in the trunk), there are sixty in the lumbar region (Katī) , eighty in the back ; sixty in the sides ; and thirty in the chest (Of the seventy ligaments to be found in the region above the clavicles) there are thirty six in the neck (Givá) and thirty-four in the head. Thus the total number of ligaments in a human body is nine hundred. 30—33.

Memorable Verses :—Now hear me describe the ligaments (Snáyus) They may be grouped under four distinct heads, viz , Pratanavati (ramifying or branching), Vritta (ring-shaped or circular), Pitthu (thick or broad), and Śushira (perforated). The ligaments (Snáyus) which present in the four extremities and the joints belong to the Pratanavati type. The Kandaráś or large ligaments are of the Vritta type ; while those which are found in the stomach (Ám íśaya) or in the intestines (Pakvášaya), and in the bladder belong

to the Śushira type. The ligaments of the chest, back, sides and head are of the Prithu type 34—35.

As a boat made of planks and timber fastened together by means of a large number of bindings is enabled to float on the water and to carry cargo ; so the human frame being bound and fastened at the Sandhis or joints by a large number of ligaments (Snáyu) is enabled to bear pressure. An injury to, or diseases of, the bones, veins, joints or muscles are not so detrimental to the system as is the case if the Snáyus are affected in any way. Only the physician, who is acquainted with the internal and external ligaments (Snáyus) of the body, is qualified to extract a hidden and imbedded Śalyam (extraneous matter etc.) from any part of the body. 36.

The Muscles (Peśis) :—The muscles (Peśis) number five hundred in all, of which four hundred are in the four extremities ; Sixty-six* in the trunk (Koshtha) and thirty-four in the region above the clavicles 37.

Muscles in the Extremities :—There are three muscles in each of the toes, thus making fifteen in the toes of one leg ; ten in the anterior part of the foot and the same number (ten) attached to the Kurcha ; ten in the sole and the ankle-bone (Gulpha,—malleoli) ; twenty in the region between the Gulpha and the knee-joint ; five in the knee-joint (Jānu) ; twenty in the thigh (Uru) ; and ten in the groin (Vankshana), thus making one hundred muscles in all in each leg. The same number is found in each of the other three extremities ; (thus making four hundred in all). 38.

Muscles in the Koshtha :—(Of the sixty-six muscles in the trunk), three are in the region of the

* Gayāḍasa reads sixty in the trunks and forty above the clavicles

anus (Pāyu); one in the penis; one in the perineum (Sevani), two in the scrotum; five in each of the haunches (Sphik), two in the top or head of the bladder, five in the abdomen (Udara), one about the umbilicus; five along each side (of the spinal column), on the upper part of the back (making ten in all); six in the sides; ten in the chest, seven around the armpits and shoulders (Akshaka-Ansa); two in the region of heart and stomach (Āmāsāya); and six in the region of the liver, spleen and colon (Unduka). 39.

Muscles of the Head and Neck :—(Of the thirty-four muscles found in this region), four are in the throat (Grivā), eight in the two jaw-bones (Hanu); one each in the regions of the throat (Kākalaka and Gaṇa), two in the palate, one in the tongue; two in the lips, two in the nose, two in the eyes, four in the cheeks, two in the ears, four in the forehead; and one in the head. Thus the positions and distributions of the five hundred muscles (Peśis) have been described. 40

Metrical Text :—The ligaments, veins, bones and joints etc., of a human body, derive their strength from the fact of their being supported by or covered over by the muscles. 41.

Extra Muscles in Women :—Females have twenty extra muscles; ten muscles are to be found about the two breasts, five in each, which (muscles) attain their full growth during puberty; four muscles are present about the parturient passage; and of these (four) two are about the external and two in the internal orifices (of the vagina); three about the region of the os, and three along the passages of the ovum and sperm. The Garbhāsāya or uterus is situated in the space bounded by the Pittāsāya (small intestine) and Pakvāsāya

(large intestine) and the foetus lies in this during the period of gestation.* 42-43.

According to their position in the system, these muscles are found to be thick, slender, small, expanded, circular, short, long, hard, soft, smooth or rough. The muscles cover the veins, ligaments, bones and joints; hence their shape and size are determined by the exigencies (organic structures) of their positions. 44

Memorable Verses :—The muscles which are found in the penis and scrotum of a man as described before correspond to the covering of the uterus in the case of a woman owing to the absence of those organs in her body. The positions and classifications of the veins, channels, Marmas and arteries will be dealt with in a separate chapter. 45-46.

The vagina of a woman resembles the navel of a conch-shell in shape and is possessed of three involuted turns (Ávaitas) like the interior of mollusc. The uterus (Garbhásaya—foetal bed) is situated at the third posterior involuted turn. The shape of the uterus resembles the mouth of a Rohit-fish (narrow at the mouth and expanded in the upper end). The foetus lies in a crouched or doubled up posture in the uterus and thus naturally at the time of parturition its head is presented at the entrance to the vagina. 47-48.

Superiority of Śalya-Tantram :—The different parts or members of the body as mentioned before including even the skin cannot be correctly described by any one who is not versed in **Anatomy**. Hence, any one desirous of acquiring a thorough knowledge of anatomy should prepare a dead body and carefully observe (by dissecting it) and examine

* If we read Muśrás'aya (bladder) in place of Pittas'aya it explains the anatomy better —Ed

its different parts For a thorough knowledge can only be acquired by comparing the accounts given in the Sástras (books on the subject) by direct personal observation. 49

Mode of dissection :—A dead body selected for this purpose should not be wanting in any of its parts, should not be a person who had lived up to a hundred years (i. e. too old age) or of one who died from any protracted disease or of poison. The excrementa should be first removed from the entrails and the body should be left to decompose in the water of a solitary and still pool, and securely placed in a cage (so that it may not be eaten away by fish nor drift away), after having covered it entirely with the outer sheaths of *Mūṅga* grass, *Kuśa* grass, hemp or with rope etc. After seven days the body would be thoroughly decomposed, when the observer should slowly scrape off the decomposed skin etc. with a whisk made of grass-roots, hair, *Kuśa* blade or with a strip of split bamboo and carefully observe with his own eyes all the various different organs, external and internal, beginning with the skin as described before. 50—56

Memorable Verses :—The Self, the occult or invisible Lord of the body cannot be detected except with the psychic eye or with that of the mind. He, who has observed the internal mechanism of the human body and is well read in the works bearing on these subjects and has thus all his doubts expelled from his mind is alone qualified in the science of *Āyurveda* and has a rightful claim to practise the art of healing. 57.

Thus ends the fifth Chapter of the *S'ārīra-sthānam* in the *Suśrūta Samhitā* which treats of the anatomy of the human body.

CHAPTER VI.

Now we shall discourse on the Śáriram which specifically treats of the Marmas* or vital parts of the body (**Pratyeka-marma-nirdeśa Śáriram.**) 1.

Classification of Marmas:—There are one hundred and seven Marmas (in the human organism), which may be divided into five classes, such as the Mánsa-Marmas, Śuíá-Marmas, Snáyu-Marmas, Asthi-Marmas and the Sandhi-Marmas. Indeed there are no other Marmas (vulnerable or vital parts) to be found in the body than the preceding ones. 2.

Their different numbers:—There are eleven Mánsa-Marmas (vulnerable muscle-joints); forty-one Śuíá-Marmas (similar veins, anastomosis); twenty-seven Snáyu-Marmas (vital ligament-unions); eight Asthi-Marmas (bone-unions) and twenty Sandhi-Marmas (vulnerable joints). 3.

Their Locations:—Of these, eleven are in one leg, thus making twenty-two in the two lower extremities. The same number counts in the two hands. There are twelve Marmas in the regions of the chest and the abdomen (Udaia), fourteen in the back, and thirty-seven in the region of the neck (Grivá) and above it. 4.

Names and distributions of Marmas:—The Marmas which are situated in each leg are known as Kshipia, Tala-Hridaya, Kuichcha, Kurehcha-Śirah, Gulpha, Indravasti, Jánu, Aní, Urvi, Lohitáksha and Vitapa. The twelve Marmas which are situated in the

* Places where veins, arteries, ligaments, joints and muscles unite and an injury to which proves generally fatal.

thorax and the abdomen (Udara) are Guda (anus), Vasti (bladder), Nábhi (umbilicus), Hridaya (heart), Stana-mula (the roots of two breasts), the Stana-Rohita, (muscles of the breasts), the two Apaláps and the two Apastambhas. The fourteen Marmas to be found in the back are the Katika-tarunas (Tatuna-bones of the waist), the two Kukundaras, the two Nitamvas (hips), Páśva-Sandhis (the two side-joints), the two Vrihatis, the two Ansa-phalakas (shoulder-blades) and the two Ansas (shoulders). The eleven Marmas to be found in an arm are known as the Kshipra, Tala-Hridaya, Kurchcha, Kuichcha-Śirah, Manivandha, Indravasti, Kurpara, Ani, Urvi, Lohitáksha and Kakshadhara. What is said of the one arm holds good of the other. The Marmas situated above the clavicle regions are known as the four Dhamanis, the eight Mátrikás, the two Krikátikás, the two Vidhuras, the two Phanas, the two Apángas, the two Ávartas, the two Utkshepas, the two Śankhas, one Sthapani five Simantas, four Śringátakas and one Adhipati. 5—9.

The different heads of Marmas:—Of the aforesaid Marmas, those known as the Tala-Hridaya, Indravasti, Guda and Stana-rohita, are **Māṃsa-Marmas**. Those known as Nila-dhamani, Mátriká, Śringátaka, Apánga, Sthapani, Phana, Stana-mula, Apalápa, Apastambha, Hridaya, Nábhi, Páśva-Sandhi, Vrihati, Lohitáksha and Urvi, are **Śirā-Marmas**. Those known as the Ani, Vitapa, Kakshadhara, Kuichcha, Kuichcha-Śirah, Vasti, Kshipra, Ansa, (shoulders), Vidhura and Utkshepa, are **Snáyu-Marmas**. Those known as the Katika-tatuna, Nitamva, Ansa-phalaka, Śankha, are **Asthi-Marmas**. The Jānu, the Kuipara, the Simanta, the Adhipati, the Gulpha, the Manivandha, the Kukundara, the Ávarta and the Krikátiká are **Sandhi-Marmas**. 10—14

Qualitative classes :—Again these Maimas (vital unions of the body) are under five distinct heads, namely, Sadya-Pránahara, (fatal within twenty-four hours), Kálántara-Pránahara, (fatal within a fortnight or a month), Viśalyaghna (fatal as soon as a dart or any other imbedded foreign matter is extracted therefrom), Vaikalyakara, (maiming or deforming) and Rujákar (painful) [according as an injury respectively produces the aforesaid effects]. Of these, nineteen Marmas belong to the Sadya-Pránahara group; thirty-three to the Kálántara-Pránahara group, three to the Viśalyaghna group; forty-four to the Vaikalyakara group; and eight to the Rujákara group 15.

Memorable Verses :—To the Sadya-Pránahara group (fatal in the course of a day if anyway hurt) belong the four Śingátakas, one Adhipati, the two Śankhas, the eight Kantha-Śirás, the Guda, the Hridaya, the Vasti and the Nábbhi. To the Kálántara-Pránahara group (fatal later on, if any way hurt) belong the eight Vaksha-Marmas, the five Simantas, the four Tala-Marmas, the four Kshipra-Marmas, the four Indra-vastis, the two Katika-tarunas, the two Pársva-Sandhis, the two Vrihatis, and the two Nitamvas. To the Viśalyaghna class belong the two Utkshepas and the one Sthapani. To the Vaikalyakara (deforming) group belong the Maimas, known as the four Lohitákshas, the four Anis, the two Jánus, the four Uvis, the four Kurchchas, the two Vitapas, the two Kuipais, the two Kukundaras, the two Kakshadharas, the two Vidhuas, the two Krikátikas, the two Ansas (shoulder), the two Ansa-phalakas, (shoulder-blades), the two Apángas (tips of eyes), the two Niás, the two Manyás, the two Phanas and the two Ávartas. A learned physician should know that the two Gulphas,

the two Mani-vandhas and the four Kurchcha-Śirah (of the hands and legs), belong to the Ruḍākara group (painful if hurt). A piercing of the Kshipra-Marma ends in an instantaneous death, or death may follow at a later time. 16-21.

Firm unions of Mānsa (muscles), Śirā (veins), Snāyu (ligaments), bones or bone-joints are called Marmas (or vital parts of the body) which naturally and specifically form the seats of life (Prāṇa), and hence a hurt to any one of the Marmas invariably produces such symptoms as arise from the hurt of a certain Marma * 22.

The Marmas belonging to the Sadya-Prānahara group are possessed of fiery virtues (thermogenetic); as fiery virtues are easily enfeebled, so they prove fatal to life (in the event of being any way hurt); while those belonging to the Kālāntara-Prānahara group are fiery and lunar (cool) in their properties. And as the fiery virtues are enfeebled easily and the cooling virtues take a considerable time in being so, the Marmas of this group prove fatal in the long run (in the event of being any way hurt, if not instantaneously like the preceding ones). The Viśalyaghna Marmas are possessed of Vātaja properties (that is, they arrest the escape of the vital Vāyu), so long as the dart does not allow the Vāyu to escape from their injured interior, the life prolongs; but as soon as the dart is extricated, the Vāyu escapes from the inside of the hurt and necessarily proves fatal. The Vaikalyakaras are possessed of Saumya (lunar properties) and they retain the vital fluid owing to their steady and cooling virtues, and hence tend only to deform the organism

* Some are of opinion that hallucination, delirium, death, stupor and coma as described in the Sutrast śānam are the results of injuries to the Mar as.

in the event of their being hurt, instead of bringing on death. The Rujākara Marmas of fiery and Vātaja properties become extremely painful inasmuch as both of them are pain-generating in their properties. Others, on the contrary, hold the pain to be the result of the properties of the five material components of the body (Pāñcha-bhautika) 23.

Different Opinions on the Marmas:—

Some assert that Marmas, which are the firm union of the five bodily factors (of veins, ligaments, muscles, bones and joints), belong to the first group (Sadya-Prānahara); that those, which form the junction of four such, or in which there is one in smaller quantity, will prove fatal in the long run, in the event of their being hurt or injured (Kālāntara-Prānahara).^{*} Those, which are the junction of three such factors, belong to the Vis'alya-Prānahara† group; those of the two belong to the Vaikalyakara‡

* The Marmas, such as Sīmana, Apalāpa, Apastambha, Śimānta, Katika-Taruna, Pārśva-Sandhi, Vihati, and Nitambā belonging to the Kālāntara-maraka group, are devoid of Māṃsa (muscles); and the 'Marmas' known as Śāntrohita, Talaliridaya, Kshipra, and Indravasu, belonging to the same class, are devoid of Asthi (bones).

† The Utkshepa marma, belonging to the Vis'alya prānahara group, is devoid of Māṃsa (muscles) and Sandhi (joint)

‡ The Sthapani-Marma, belonging to the Vaikalyakara class, is devoid of Māṃsa (muscle), S'ira and Snāyu; the Lohitāksha marma (of the same group) is devoid of S'nyu, Sandhi and Asthi (bones); the Jānu-marma (of the same group) is devoid of Māṃsa, S'ira and Snāyu; the Ureṃ marma (of the said group) is devoid of Asthi, Māṃsa and Snāyu; the Vitapa-marma (of the same class) is devoid of Māṃsa, S'ira and Asthi; the Kurpara-marma (of the same class) is devoid of Māṃsa, S'ira, and Snāyu; the Kukundara-marma (of the same class) is devoid of Māṃsa, S'ira and Sandhi; the Kakshadhara marma (of the same class) is devoid of S'ira, Asthi, and Sandhi; the Vidhura-marma (of the said group) is devoid of Māṃsa, S'ira and Sandhi; the Krikatika-marma is devoid of Māṃsa, S'ira, and Sandhi; the Ansa-marma (of the same group) is devoid of Māṃsa, Snāyu and Sandhi; the Ansa phalaka marma

group; and those in which only one of them exists belongs to the last or pain-generating type (Rujákara)*.

But the fore going theory is not a sound one, inasmuch as blood is found to exude from an injured joint which would be an impossibility in the absence of any vein, ligament (Snáyu) and muscle being intimately connected with it. Hence every Marma should be understood as a junction or meeting place of the five organic principles of ligaments, veins, muscles, bones and joints 24-25

Metrical text:—This is further corroborated by the fact that the four classes of Śírá or vessels (which respectively carry the Váyu, Pitta, Kapha and the blood) are found to enter into the Marmas for the purpose of keeping or maintaining the moisture of the local ligaments (Snáyu), bones, muscles and joints and thus sustain the organism.† The Váyu, aggravated by an injury to a Marma, blocks up (those four classes of vessels) in their entire course throughout the organism and gives rise to great pain which extends all over the body. All the internal mechanism of a man (of which a Marma has been pierced into with a shaft or with any other piercing matter) becomes extremely painful, and seems as if it were being constantly shaken or jerked, and symptoms of syncope are found to set in. Hence a careful examination of the affected Marma should

(of the said group) is devoid of Mānsa, Snáyu and Sandhi; the Nilá, Manyá and Phana Marmas (of the same group) are devoid of Mānsa, Sandhi and Asthi; the Ávarta-marma is devoid of Ś'írá, Snáyu and Mānsa; the Apānga-marma (of the said class) is devoid of Mānsa, Snáyu and Sandhi.

* The Gulpha, Manibandha, and Kurchcha-s'íra Marmas, belonging to the Rujákara group, are devoid of Mānsa, Ś'írá, Snáyu and Asthi, i.e. Sandhi alone is present in these.

† Hence the piercing of a bone is attended with bleeding.

precede all the foregoing acts of extricating a Śalya from its inside. From that similar aggravated conditions and actions of the Pitta and the Kapha should be presumed in the event of a Marma being any way injured or pierced into. 26—29.

A Marma of the Sadyah-Prānahara type being perforated at its edge brings on death at a later time (within seven days), whereas a deformity of the organ follows from the piercing of a Kālántara-Māraka* Marma at the side (instead of in the centre). Similarly, an excruciating pain and distressful after-effects mark a similar perforation of a Marma of the Viśalyaghna† group. And a Marma of the Rujákara‡ class produces an excruciating pain (instead of a sharp one) in the event of its being pierced at the fringe. 30

An injured Marma of the Sadyah-Prānahara type terminates in death within seven days of the injury, while one of the Kālántara type, within a fortnight or a month from the date of hurt (according to circumstances). A case of injured Kshipra-Marma seldom proves fatal before that time (seven days). An injured Marma of the Viśalyaghna or Vaikalyakara group may prove fatal in the event of its being severely injured. 31.

Marmas of the Extremities :—Now we shall describe the situation of every Marma. The

* If any of the Marmas of the Kālántara-Prānahara group be deeply perforated, then this perforation is sure to bring on death within a day (i.e. it will act like a slightly injured Marma of the Sadyah-Prānahara group).

† Any Marma of the Viśalyaghna-group, being deeply perforated, brings on death within seven days (i.e. it will behave like a slightly injured Marma of the Kālántara-Prānahara class).

‡ Any Marma of the Rujákara class, being deeply perforated (injured), is sure to bring excruciating pain etc., (i.e., it will act like a slightly injured Marma of the Viśalyaghna group).

Maima, known as the **Kshipra***, is situated in the region between the first and the second toes (Tarsal articulation), which, being injured or pierced, brings on death from convulsions. The Maima, known as the **Tala-Hridaya†**, is situated in the middle of the sole of the foot in a straight line drawn from the root of the middle toe. An injury to this Marma gives rise to extreme pain which ends in death. The Marma, known as the **Kurecha‡**, is situated two fingers' width above from the Kshipra one on each side of the foot. An injury to this Marma results in shivering and bending in of the foot. The Marma called **Kurecha-Sirah §** is situated under the ankle-joints, one on each side of the foot (Gulpha-Sandhi), an injury to it gives rise to pain and swelling of the affected part. A perforation of the **Gulpha-Marma ||**, which is situated at the junction of the foot and the calf, results in pain, paralysis and maimedness of the affected leg. 32-37

An injury to the Maima which is situated in the middle muscle of the calf to the distance of between twelve and thirteen fingers' width from the ankle, and known as the **Indravasti-Marma, ¶** results in excessive hæmorrhage which ends in death. 38.

* It is a Snáyu-Marma (ligament) to the width of half a finger, and belongs to the Kálántara group.

† It is a Mānsa Marma to the width of half a finger and belongs to the Kálántara group.

‡ It is a Snáyu-Marma to the length of four fingers' width, and belongs to the Vaikalyakara group.

§ It is a Snáyu-Marma, one finger in length and belongs to the Vaikalyakara group.

|| It is a Sandhi Marma, to the length of two fingers', and belongs to the Vaikalyakara group.

¶ Indravasti measures two fingers in length according to Bhoja and

An injury to or piercing of the **Jānu-Marma**,^{*} situated at the union of the thigh and the knee, results in lameness of the patient 39.

A piercing of the **Ānu-Marma**,[†] situated on both the sides above three fingers' width from the Jānu (knee joint), brings on swelling and paralysis (numbness) of the leg. 40

A perforation of the **Urvi-Marma**,[‡] situated in the middle of the Uru (thigh), results in the atrophy of the leg, owing to the incidental hæmorrhage. An injury to the **Lohitāksha-Marma**,^{||} situated respectively a little above and below the Urvi-Marma and the Vankshana (groin-joint), and placed near the thigh, is attended with excessive hæmorrhage and causes paralysis (of the leg). 41-42

An injury to the **Vitapa-Marma**,[¶] situated between the Scrotum and the Vankshana (inguinal region), brings on loss of manhood or scantiness of semen. Thus the eleven **Sakthi-Marmas** of one leg have been described ; those in the other being of an identical nature with the preceding ones. The Marmas in the hands are almost identical with those of the legs, with the exception that **Manivandha**, **Kurpara** and **Kakshadhara** Marmas

Gayādāsa, though half a finger in width according to others. It is a **Māṃsa-Marma** and belongs to the **Kālāntara** group.

* It is a joint-Marma, three fingers in length and belongs to the **Vaikalyakara** group

† It is a ligament-Marma, half a finger in length, (three fingers according to Gayādāsa) and is of the **Vaikalyakara** class

‡ It is a **S'irā** Marma, half a finger in length and of the **Vaikalyakara** group.

|| It is a **S'irā**-Marma, half a finger in length and of the **Vaikalyakara** group

¶ It is a **Snāyu-Marma** to the length of one finger and of the **Vaikalyakara** group.

occur in the place of the Gulpha, Jānu and Vitapa Marmas respectively. As the Vitapa-Marma is situated between the scrotum and the Vankshana (inguinal region), so the Kakshadhara-Marma is situated between the Vaksha (chest) and the Kaksha (armpit). An injury to these causes supervening symptoms. An injury to the Manivandha-Marma (wrist-marma) results specially in inoperativeness (Kuntha) of the affected hand ; an injury to the Kurpara-Marma ends in dangling (Kuni) of the hand ; and an injury to the Kakshadhara results in hemiplegia. Thus the forty-four Marmas of the upper and the lower extremities have been described. 43-46

Marmas on the Thorax etc. :—Now we shall describe the Marmas, situated in the region of the thorax and the abdomen (trunk). A hurt to the **Guda-Marma***, which is attached to the large intestine and serves as the passage of stool and flatus, ends fatally (within twenty-four hours of the hurt). An injury to the **Vasti-Marma,†** situated inside the cavity of the pelvic region and the bladder and composed of small muscles and blood (and which serves as the receptacle of urine), proves fatal within the day, except in the cases of extracting the gravel, only when the injury to the organ is short of complete perforation of both of its walls. The urine oozes out through the aperture in the case where only one of its walls has been perforated, and which may be closed and healed up with proper and judicious medical treatment. An injury to the

* It is a Mānsa-Marma to the length of four fingers' width and belongs to the Sadyo-māraka class.

† It is a ligament combination (Snāyu marma) to the length of four fingers, belonging to the Sadyah-Prānhara class,

Nābhi-Marma,* the root of all the *S'irās* and situated between the *Āmāśaya* (stomach) and the *Pakvāśaya* (intestines) ends in death within the day. 47-50

A hurt to the **Hridaya-Marma**,† which is situated in the thorax between the two breasts and above the pit of the *Āmāśaya* and forms the seat of the qualities of *Sattva*, *Rajas* and *Tamas*, proves fatal within the day. An injury to the **Stana-mula-Marmas**,‡ situated immediately below each of the breasts and about two fingers in width fills the *Koshtha* (thorax) with deranged *Kapha*, brings on cough, difficult breathing (asthma) and proves fatal. An injury to any of the **Stana-Rohita-Marmas**,§ situated above the nipples of the breasts about two fingers in width, fills the cavity of the *Koshtha* (thorax) with blood, producing symptoms of cough and asthma, and ends fatally. An injury to the **Apalāpa-Marmas**,|| situated below the *Ansa-kuta* (balls of the shoulders) and above the sides (meeting of the different branches of the sub-clavicle veins *i.e.* *axilla*), transforms the blood of the organism into pus and proves fatal thereby. 51-54

An injury to any of the *Vāyu*-carrying vessels, known as the **Apastambha-Marma**¶ (meeting of the bifurcated branches of the bronchi lying on both the sides

* It is a *S'ira-Marma* to the length of four fingers, belonging to the *Sadyah-Pranahara* class.

† It is a *S'irā-Marma* to the length of four fingers and of the *Sadyah-Prānahara* class.

‡ It is a *S'irā-Marma*, two fingers in length and of the *Kālāntara* class.

§ It is a *Manasa-Marma* about half a finger in length and of the *Kālāntara* class. (according to *Vagbhata*, of the *Sadyo-Māraka* class).

|| It is a *S'irā-Marma*, half a finger in length, and of the *Kālāntara* class.

¶ It is a *S'irā-Marma*, half a finger in length and belongs to the *Kālāntara* class

of the breast), fills the Koshtha with the deranged Vāyu (tympanites) accompanied by cough and dyspepsia, and terminates in death Thus the twelve Marmas situated in the thorax and abdomen are described. 55-56.

Prishtha Marmas :—Now we shall discourse on the Marmas in the back (of a man) An injury to any of the *Katika-tarunas** (sacro-iliac articulation), situated in the region of the S'roni (sacrum) on both sides of the spinal column, gives rise to an excessive hæmorrhage and consequent pallor and ends in death A hurt to any of the *Kukundara Marmas* † (lit :—a hollow—the great sacro-sciatic notch), situated on both sides of the spinal column and in the region slightly below the waist (in the loins), results in complete anæsthesia and inoperativeness of the lower extremities A hurt to the *Nitamva-Marmas*,‡ attached to the side above the S'roni (pelvis) and attached inside to the muscles of the waists, gives rise to Śosha (atrophia) in the lower extremities, weakness and ultimately brings on death An injury to the *Pārsva-Sandhi-Marmas* § (cælic axes) which are situated just at the middle below the extremities of the sides (Pārs'va) and which lies attached at the middle between the loins at their lower regions, feels the Koshtha (abdomen) with the blood and results into death A hurt to the *Vrihati-Marmas* ||

* It is an *Asthi-Marma*, half a finger in length and of the *Kālántara-māraka* class.

† They are *Joint-marmas* (*Sandhi*), half a finger in length and of the *Vaikalyakara* group

‡ It is a *bone Marma*, half a finger in length, and of the *Kālántara* class.

§ It is a *S'irā-Marma* to the length of half a finger and belongs to the *Kālántara* class.

|| They are *S'irā-Marmas* (arterial anastomosis) to the length of half a finger and belong to the *Kālántara* class.

which commencing from the roots of the breast course round both the sides of the spinal column (Pristha-vamśa), cause excessive bleeding, and the patient dies, as supervening symptoms arise from an excessive loss of blood. An injury to any of the two **Amsa-phalaka-Marmas*** situated on either side of the vertebral column and connected with the scapula brings on anesthesia or atrophy (Śo-ha) of the arms. There are two Marmas known as **Amsa-Marmas**† which are situated on either side midway between the neck and the head of the arms and connect the Amsa-Pītha (glenoid cavity) and the Skandha (shoulder). An injury to any of these Marmas is attended with an incapacity of moving the hands. Thus the fourteen Marmas in the back have been described. 57-65

The Jatrugata-Marmas :—Now we shall describe the Marmas which are situated in the regions above the clavicles (Urddhva-Jatru). There are four Dhamanī (arteries) about the two sides of the Kantha-Nādi (wind-pipe). Two of them are known as **Nilā**, and the other two as **Manyā**. One Nilā and one Manyā are situated on either side of the larynx, (i.e., anterior and posterior side of the larynx). An injury to any of them produces dumbness, and change of voice (hoarseness), and also the loss of the faculty of taste ‡. An injury to any of the eight Śīrās (arteries), four being on each side of the neck (Grīvā), and known as **Śīrā-Mātrika-Marmas** § ends fatally within the day. 65-69

* It is an Asthi-Marma, half a finger in length and is Vaikalyakara.

† They are Snāyu-Marmas, half a finger in length and of the Vaikalyakara class.

‡ They are Śīrā-Marmas, to the length of four fingers and of the Vaikalyakara class.

§ They are Śīrā-Marmas, four fingers in length and of the Sadjo. Māran class.

An injury to any of the two Marmas lying at the junction of the head and neck (Gīivá) and known as **Krikátika*** (transverse process of the arch of the atlas) results in a free movement of the head. A hurt to any of the Marmas attached to the lower end of an ear (posterior extensile ligament) and known as the **Vidhura†** Marma results in the loss of hearing. An injury to the **Phana-Marmas‡** attached to the interior channels of both the nostrils, results in the loss of the faculty of smell. An injury to the **Apānga-Marmas§** (Anastomosis of the infra-orbital artery) situated below the tips of the eye-brows and about the external corners of the eyes, brings on blindness or defective vision. An injury to the **Ávarta-Marmas||** situated above and below the eye-brows, brings on blindness and impaired vision. An injury to the **Śankha-Marmas¶** (meeting or suture of the temporal, frontal and sphenoid bones—*Pterion*), situated over the tips of the eye-brows and between the ears and the forehead, results in death within the day. The Marmas situated over the two temples (**Sankha**) and at the border of the hair (sculp) are called **Utkshepa-Marma** (meeting of the posterior and anterior temporal arteries)§. An extraction of a shaft (**Śalya**) or of any

* They are Sandhi-Marmas, half a finger in length, and of the Vaikalyakara group.

† It is a S'náyu-Marma, and is of the Vaikalyakara class.

‡ They are S'irá-Marmas to the length of half a finger and of the Vaikalyakara class.

§ They are S'irá Marmas to the length of half a finger and of the Vaikalyakara class.

|| They are Sandhi-Marmas, to the length of half a finger and of the Vaikalyakara class.

¶ They are Asthi-Marmas to the length of half a finger.

§ They are S'náyu-Marmas, half a finger in length and of the Vis'alyaghna class.

extraneous pointed thing lodged into these Marmas, results in the death of the patient, who, on the contrary, lives as long as the shaft is allowed to remain inside or if the shaft comes out itself (after putrefaction) 70-75.

An injury to the **Sthapani-Marma*** (nasal arch of the frontal veins), situated in the middle of the eye-brows, ends in the manner of the preceding one. An injury to any of the five joints of the head which are known as the **Simanta-Marmas†**, results in fear, insensibility and madness of the patient and terminates in death. An injury to any of the four **Sringātaka-Marmas‡** which forms the junction of the four **Śirás** (nerves), (branches of the facial artery) and soothes the nose, the eyes, the ears and the tongue, proves fatal within the day. An injury to the **Adhipati-Marmas§** (the vertical groove on the frontal bone) which is marked in the inner side of the roof of the cranium by the **Śirā-Sannipāta** (superior longitudinal sinus), and on the exterior side by the ringlet of the hair (**Romāvarta**) proves fatal within the day. Thus we have described the thirty-seven Marmas, situated in the region above the clavicles (**Urddhva-Jatru**) 76-80.

Memorable Verses :—An incision should be made at the spot a finger's width remote from the **Urvī**, **Kurchcha-Śirā**, **Vitapa**, **Kaksha** and a **Pārsva-Marma** ; whereas, a clear space of two fingers should

* They are **Śirā Marmas** to the length of half a finger and of the **Viśālyaghna** class.

† They are **Sandhi-Marmas** to the length of four fingers and of the **Kālāntara-Prānabara** class.

‡ They are **Śirā Marmas** to the length of four fingers and of the **Sadyah Prānabara** class.

§ It is a **Sandhi Marma**, half a finger in length and of the **Sadyah-Prānabara** class.

be avoided from its situation in making any incision about the Stanamula, Manivandha or Gulpha-Marma. Similarly a space of three fingers should be avoided from the Hridaya, Vasti, Kurchcha, Guda or Nábhī Marma ; and a space of four fingers should be avoided in respect of the four Śringátakas, five Simantas and ten Marmas in the neck (Nīlá etc.) , a space of half a finger being the rule in respect of the remaining (fifty-six).^{*} Men, versed in the science of surgery, have laid down the rule that, in a case of surgical operation, the situation and dimension of each local Marma should be first taken into account and the incision should be made in a way so as not to affect that particular Marma, inasmuch as an incision, even extending or affecting, in the least, the edge or the side of the Marma, may prove fatal. Hence all the Marma-Sthānas should be carefully avoided in a surgical operation. 81

The amputation of a hand or a leg may not prove fatal whereas a wound in any of the Marmas situated therein is sure to bring on death. The vessels become contracted in the case of a cut in the leg or in the hand of a man, and hence the incidental bleeding is comparatively scantier. Therefore it is that a cut in any of these parts of the body, however painful, does not necessarily prove fatal, like the lopping off of the branches of a tree. On the contrary, a man pierced into in any such Marmas, as the Kshipra or the Tala, suffers from excessive

^{*} Some are of opinion that a surgical operation (in the case of the remaining fifty-six) should be made, leaving a space equal in measurement to the dimensions of a palm (from the affected part). Gayádāsa, having learnt from Bhōja, explains that a space of two fingers should be left (from the affected part) in making surgical operations of the ten marmas, namely, the two Gulphas, the roots of the two breasts, the four Indravastis, and the two Manivandhas.

hæmorrhage (from the affected part) and attended with an excruciating pain, owing to the derangement of the Vāyu, and meets his doom like a tree whose roots have been severed. Hence, in a case of piercing or of injury to any of these Marmas, the hand or the leg should be immediately amputated at the wrist or at the ankle (respectively). 82

The medical authorities have described the Marmas to have covered half in the scope of Śalya Tantra (Surgery), inasmuch as a person hurt in any of the Marmas dies presently (i e, within seven days of the hurt). A deformity of the organ is sure to result from an injury to one of these Marmas, even if death be averted by a course of judicious and skillful medical treatment. 83.

The life of the patient is not to be despaired of even in the case of fracture or crushing of a bone of the Koshtha, Śirah and Kapāla or perforation of the intestines etc., if the local Marmas are found not to be in any way hurt or affected. Recovery is common in cases of cuts (pierce) in the Sakthi, Bhuja, Pāda and Kara or in any other part of the body and even where a whole leg or hand is found to be severed and carried away if the Marmas are not in any way hurt or affected. 84.

These Marmas form the primary seats of the Vāyu, the Soma (lunar) and Tejas (fiery principles of the organism), as well as of the three fundamental qualities of Satva, Rajas and Tamas, and that is the reason why a man, hurt in any of the Marmas, does not live. 85

An injury to a Marma of the Sadyah-Prānahara class (in which death occurs within a day) is attended with the imperfection of the sense organs, loss of consciousness, bewilderment of Manah (mind) and Buddhi

(intellect) and various kinds of pain. An injury to a Marma of the Kálántara group (of a person) is sure to be attended with the loss of Dhátus (blood etc.) and various kinds of supervening symptoms (Upadrava) which end in death. The body of a person, hurt in any of the Vaikalyakara Marmas, may remain operative only under a skillful medical treatment; but a deformity of the affected organ is inevitable. An injury to any of the Viśalyaghna Marmas ends in death for the reasons mentioned above. An injury to any of the Rujákara Marmas gives rise to various kinds of pain in the affected organ, which may ultimately bring about a deformity of the same, if placed under the treatment of an ignorant and unskillful Vaidya (Surgeon). 86.

An injury to the adjacent part of a Marma, whether incidental to a cut, incision, blow (Abhighāta), burn, puncture, or to any other cause exhibits the same series of symptoms as an actually affected one. An injury to a Marma, whether it be severe or slight, is sure to bring deformity or death.* 87

The diseases which are seated in the Marmas, are generally serious, but they may be made to prove amenable with the greatest care and difficulty. 88-89.

* Gayádāsa does not read this verse.

Thus ends the sixth Chapter of the S'árita Sthānam in the Sushruta Samhitá, which treats of Marmas.

CHAPTER VII.

Now we shall discourse on the Śáriram which treats of the description and classification of Śírá or vascular system * (**Śírá-Varnana-Vibhaktināma Śáriram**).

There are seven hundred Śírás (vessels) in the human organism (except those which cannot be counted for their extremely attenuated size). The vessels (Śírás) by their contractibility and expansibility &c, sustain and nourish the organism in the same manner as streamlets and canals serve to keep a field or a garden moist and fruitful. From the principal or central trunk hundreds of small and minute vessels branch off and spread all over the body, just as small or minute fibres are found to emanate from the large central vein of the leaf of a plant. They originate from the umbilical region and thence they spread all over the body upwards and downwards and obliquely. 2

Memorable Verses :—All the Śírás (vessels) that are found in the organisms of created beings, originate from the umbilical region (Nábhī)† and thence they spread all over their bodies. The life of an organic animal is seated in the vessels surrounding its navel which forms their starting point. The navel in its turn rests on or is attached to the Pránas (the life-carrying vessels—nerves attached to it) in the same

* The Sanskrita term Śírá denotes veins, nerves, arteries and lymphatic vessels as well. Some read *Śírá-Varna* (different colours of the Śírás) in lieu of Śírá-varnana (description of Śírás).

† Most probably the idea is derived from the appearance of the Śírás in their foetal state.

manner as the nave of a wheel supports the spokes, and the spokes in their turn support the nave. 3-4.

Principal Śirás:—Of these Śirás (vessels), forty are principal ones, of which ten are Vāyu-carrying Śirás (nerves), ten are Pitta-carrying Śirás (veins), ten convey Kapha (lymphatic vessels?) and ten are blood-carrying Śirás (arteries). Of these the Vāyu-carrying Śirás, situated in the specific receptacle of that bodily principle (Vāta), are again found to branch out in one hundred and seventy five smaller branches (ramifications). Similarly, each of the remaining Pitta-carrying, Kapha-carrying and blood-carrying vessels (Śirás) situated in their specific receptacles, (*i.e.*, in the receptacles of Pitta, Kapha and spleen and liver respectively) are found to branch out in as many numbers (one hundred and seventy-five),—thus making a total of seven hundred in all. 5.

Their Specific Locations:—There are twenty-five Vāyu-carrying Śirás (nerves) in one leg and the same count applies to the other. Similarly there are twenty five Vāyu-carrying Śirás (vessels) in each of the hands. There are thirty-four Vāyu-carrying vessels in the Kosktha (trunk), of these eight occur in the pelvic regions attached with the anus and the penis; two in each of the sides, six in the back, six in the Udara (cavity of the abdomen), and ten in the region of the chest. There are forty-one Vāyu-carrying Śirás (vessels) situated in the region above the clavicles. Of these fourteen occur in the neck; four in the two ears, nine in the tongue; six in the nose and eight in the two eyes. Thus we have finished the description of the one hundred and seventy-five Śirás that carry Vāyu. 6

What has been said of these Vāyu-carrying vessels (Śirás) will also hold good to the rest (in blood-carrying,

Pitta-carrying and Kapha-carrying channels in the respective regions of the body), with the exception that in these three cases, (Pitta, Kapha and blood) ten occur in the eyes and two in the ears in lieu of eight and four respectively, as in the case of Váyu-carrying Śirás (vessels) Thus we have described the seven hundred Śirás with their bianches. 7.

Memorable Verses—The Váyu-carrying Śirás.—The Váyu in its normal state and coursing through its specific Śirás (vessels) helps the unobstructed performance of its specific functions *vis.*, expansion; contraction, speech, &c., and produces the clearness and non-illusiveness of Buddhi (intellect) and the sense-organs, whereas a coursing of the said Váyu in a deranged condition through the aforesaid Śirás (vessels), gives rise to a host of such diseases as are due to the derangement of Váyu 8

The Pitta-carrying Śirás :—The Pitta in its normal state and coursing through its specific Śirás (vessels) produces the healthy glow of complexion, relish for food, kindling of the appetite, healthfulness and other good effects, characteristic of the Pitta, which however being aggravated and coursing through them gives rise to a host of Pittaja diseases 9.

The Kapha-conveying Śirás :—The Kapha in its normal state and coursing through its specific Śirás (vessels) smoothes and contributes to the firmness of the limbs and joints, improves the strength and produces all other good effects specially belonging to it, whereas the same Kapha, flowing through them in an aggravated condition, ushers in a large number of the Kaphaja distempers of the body. 10.

The Rakta-carrying Śirás :—The blood in its normal state and flowing through its specific Śirás

(vessels) strengthens the other fundamental principles (Dhátus) of the body, improves the complexion, aids the organ of touch in the proper performance of its functions and produces other functions characteristic of it in the body. Flowing through them in a vitiated condition, it begets diseases which are due to the derangement of the blood. 11.

There is not a single Śirā (vessel) in the body which carries either the Vāyu, or the Pitta or the Kapha alone. Hence each of the vessels should be regarded as affording an opportunity for conveying all kinds of the Doshas of the body, for as soon as they are deranged and aggravated they seem to flow through all the Śirás promiscuously. Hence they are called Sarva-yahā. 12.

Specific colours of the Śirás:—The vessels which carry the bodily Vāyu (nerves) have a vermilion (yellowish red) hue and seem to be stuffed with Vāyu. The Pitta-carrying vessels (veins) are coloured blue and felt warm to the touch. The Kapha-carrying vessels are hard, cold to the touch and white-coloured. The blood-carrying vessels (arteries) are red and neither too hot, nor too cold. 13.

Now we shall describe the Śirás (veins) which a surgeon should not pierce or open, inasmuch as it may result in death, or bodily deformity. An intelligent surgeon shall always bear in mind that sixteen out of the four hundred vessels in the extremities, thirty-two out of the hundred and thirty-six vessels in the trunk and fifty out of the sixty-four vessels in the region above the clavicles, should not be opened or bled on any account. 14-15

Of the one hundred vessels in a single leg, the one Jáladharā (which is attached to the connective tissue

of the Kurchcha-Śirah) as well as the three internal ones, of which two are known as the Uṭi-veins and the other as the Lohitāksha, together with the corresponding ones in the other leg and in the two hands, thus making sixteen in all, which are situated in the upper and lower extremities, should be held unfit for opening. Of the thirty-two veins in the pelvic region (Śroni), eight such, known as the four Vitapas (two on each side of the testicles) and the four known as the Katika-tarun as (two on each side) should be considered unfit for bleeding or opening. Of the sixteen veins (eight on each side) at the sides, the one which courses upward from each of the two sides and is attached to the Marma known as the **Pārsva-Sandhi**, should be considered unfit for similar purposes. Of the twenty-four Śirās which are found in either side of the spinal column, an incision should not be made into any of the two Śirās (on each side) known as the Vrihati and which run upward along either side of it (spinal column). Similarly of the twenty-four Śirās in the abdomen, the two along each of the two sides of symphysis pubis should be held unfit for opening or bleeding. Of the forty veins in the chest, the two in the heart, two in the root of each breast and two in each of the Stana-rohita (muscle of the breast) and one in each of the Apastambhas and Apalāpas, making fourteen in all, should not be opened. Thus thirty-two Śirās in the regions of the back (i.e., the sides and the pelvic regions), the abdomen and the chest should be regarded as unfit for opening or other surgical purposes. 16—21.

There are one hundred and sixty-four Śirās in the region above the clavicles. Of these the eight and four (making twelve and respectively known as the eight Mātrikās, the two Nilās and the two Manyās) out of the fifty-six in the neck and the throat, should be

regarded as unfit for opening. Similarly the two veins in the two Krikátikás and two in the two Vidhuras, should be held unfit for similar purposes; thus making sixteen in all in the neck. Of the sixteen vessels (eight on each side) of the Hanus (Jaws), the two Śírás about each of the joint of the jaw-bones should never be opened. 22.

Of the thirty-six* vessels in the tongue, sixteen are situated in the under-surface of that organ and twenty in the upper surface; of these the two speech-carrying and the two taste-carrying ones should be held unfit for venesection. Of the twenty-four vessels in the nose, the four adjacent to the nose proper and the one running into the soft palate should be held unfit for similar purposes. Of the thirty-eight vessels in the two eyes, the one situated at each Apānga should not be opened. Of the ten vessels in the two ears, the sound-carrying one in either ear should not be opened. Of the sixty vessels of the nose and eyes coursing through the region of the forehead, the four vessels adjacent to the sculp proper and the Ávarta-Marma should be held unfit for opening or bleeding. One vessel (Śírā) in each of the two Ávartas and the one in the Sthapani-marma should not be opened (on any account). Of the ten vessels in the temple, the one about each temple-joint should be held unfit for opening or bleeding. Of the twelve vessels in the head, the one

*Gayi asserts that there are eight each of the Vāyu-carrying, Pitta-carrying, Kapha-carrying and blood-carrying Śírás in the region of the neck, thus making a total of 32 in place of 36 of the text.

He also holds that there are 28 in place of 36 Śírás in the tongue, 16 in place of 24 in the nose, 24 in place of 38 in the eyes, 16 in place of 10 in the ears and 8 in place of 10 in the temple. In the counting of the Śírás situate in the other parts of the body, he, however, does not differ from the text.

in each of the two Utkshepa-Marmas, one in each of the (five) Simanta-Marmas and one in the Adhipati-Marma, should be held unfit for the purpose. No incision or opening should be made into any of these fifty vessels situated in the region above the clavicles. 23-31.

Memorable verses :—As the stem and leaves etc, of a lotus plant, originated from its bulb, spread over the whole surface of a pool or tank (lit. water), so the vessels emanating from the umbilicus of a man spread over his whole organism. 32.

Thus ends the seventh Chapter of the S'āra Sthānam in the Susruta Samhitā which treats of the description and classification of S'irās (vessels)

CHAPTER VIII.

Now we shall discourse on the Śáriram which treats of the method of Venesection etc (**Śirā-Vyadha-Vidhi-Śáriram**). 1

Persons unfit for Venesection:—The vessel or vessels (Śirā) of an infant, an old man, a perched man, one fatigued and emaciated with endocarditis (Kshata-kshina), a person of timid or coward disposition, a person used up with excessive drinking or sexual enjoyments or tired with the troubles of long journey, an intoxicated person, a patient who has been treated with purgatives, emetics or with Anubāsana and Ásthāpana measures (enemas), a man who has passed a sleepless night, an impotent (Kliva) or emaciated person, an enceinte, or one afflicted with cough, asthma, high fever, phthisis convulsions, paralysis, thirst, epilepsy, or effects of fasting, should not be pierced or opened. Incisions should not be made into those veins (Śirās) which are not fit for opening, or into the fit ones, if invisible; it should be the same with those which cannot be properly ligatured or even if ligatured cannot be raised up 2.

Diseases which are amenable to acts of venesection have been described before (Śonita-Varnaniya-Adhyāya). Venesection may be performed in the said diseases as well as in those which have not been enumerated in connection with them and also in other cases whether supplicated or unsupplicated, if such a proceeding is deemed necessary and after the application of Sneha and Sveda. Venesection should be made even in the cases declared unfit for it (such as in an infant etc.) in cases of

blood-poisoning (such as snake-bite etc.) and in fatal diseases (Vidiadhi etc.). 3-4

Preliminary rules :—The patient should be duly fomented (Sveda) and anointed (Sneha) with oily preparations. A liquid* food or diet consisting of articles which are antidotal to the bodily principles (Doshas) which engendered the disease or Yavágu (gruel) should be given to him at first. Then at the proper season (i.e., not in the rainy or winter season etc.) the patient should be brought near the surgeon and made to sit or lie down and the part to be incised upon should be bound, neither too loosely (*e g*, in the extremities etc) nor too tightly (*e g*, in the head etc), with any of the accessories, such as cloth, linen, skin, the inner fibres of a bark, creepers etc., so as not to create any pain or agitation in his mind. Then the vein should be duly opened with proper instrument (and with a careful regard to the situation of any local Marma) 5

Metrical text :—Venesection should not be performed in an extremely cold or hot, cloudy or windy day. It is forbidden to open a vein without necessity or in a healthy person, or in a disease in which such as a proceeding is absolutely prohibited. 6.

The Yantra-Vidhi :—The patient whose vein is to be operated upon should be seated on a stool to the height of an Aratni (distance of the elbow from the tip of the small finger) with his face turned towards the sun. He should keep his legs in a drawn up or contracted posture resting his elbows (Kurpara) on his knee-joints and the hands with his two thumbs closed in his fists placed on (the upper ends of) his Manyás (sterno mastoid muscles), Then having cast the binding

* A liquid food is recommended for the purpose of liquefying the blood so as to bleed easily.

linen on the two closed fists thus placed on the neck, the surgeon should ask another man from the back side of the patient to take hold of the two ends of the cloth with his left hand having the palm turned upward, and then ask him to tie up with his right hand the bandage round the part, neither too diffusely nor too tightly nor too loosely, so as to raise the vein and to press the bandage round the back for a good out-flow of blood. Then he (surgeon) should perform the operation in the desired spot, the patient having been previously asked to sit with his mouth full of air (*i.e.*, he should confine his breathing till the surgical operation is completed). This proceeding should be adopted in opening any vein of the head, save those which are situated in the cavity of the mouth 7

In the case of opening a vein (*Śirā*) in the leg, the affected leg should be placed on a level ground, while the other leg should be held in a somewhat contracted posture, at a little higher place. The affected leg should be bound with a piece of linen below its knee-joint and pressed with the hands down to the ankle. A ligature of the above kind should then be tied four fingers above the region to be incised upon, after which the vein should be opened. 8

In the case of opening a vein (*Śirā*) in the arms, the patient should be caused to sit easily and fixedly with his two thumbs closed in his fists (as above). A ligature of the above-mentioned kind (rope etc.) should be tied (four fingers above the part to be incised upon and the vein opened in the aforesaid manner. The knee-joint and the elbow should be held in a contracted or drawn up posture at the time of opening a vein in a case of *Gridhrāsi* (*Sciatica*) and *Viś'rachi*, respectively. The patient should hold his back raised

